TRAINING MANUAL

ON

SAFETY AT SEA

SAFETY AT SEA FOR SMALL-SCALE FISHERIES IN THE DEVELOPING COUNTRIES

December 2008

(GCP/GLO/200/MUL)

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

TRAINING MANUAL

ON

SAFETY AT SEA

Prepared for
FAO: GCP/GLO/200/MUL

December 2008

By

Per DANIELSSON
Mamadou FAYE
Babacar FAYE
Mamanding KUYATEH
Abdou MBODJ
Mamadou NDIAYE
Babana Ould YAHYA

This Training Manual is one of a series of training manuals prepared during the course of the project identified on the title page. The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this information product are those of the author and do not necessarily reflect the views of FAO.

SUMMARY

This training manual on safety at sea for small-scale fisheries was prepared under FAO project GCP/GLO/200/MUL. It was the basic document used in the training of training officers in safety at sea for small-scale fisheries in six countries belonging to the Sub-Regional Fisheries Commission (SRFC) : The Gambia, Sierra Leone, Senegal, Guinea Bissau, Guinea and Mauritania. The proposed modules cover topics such as international regulations on safety at sea, maritime navigation, participatory surveillance and vessel safety.

The manual also includes concepts and approaches introduced in those West African countries with a tradition of marine fisheries where, for the most part, traditional wooden pirogues, constructed either of hollowed-out logs or planks, continue to be used. The manual also shows the different levels of appreciation given to safety at sea for small-scale fisheries noted by the authors during a number of workshops held in the countries concerned and the efforts made to ensure the safety and health of small-scale fishermen. However, it was generally acknowledged that the authorities of the target countries attach great importance to safety in this vital fisheries sub-sector involving players whose livelihoods are very precarious. Generally speakling, access to safety equipment is still extremely limited due to high costs and the lack of shops specializing in the sale of this type of equipment.

TABLE OF CONTENTS

ACRONYMS

ANAM	Agence nationale maritime (National Maritime Agency)
ANAPA	Agence nationale de la pêche artisanale (National Small-Scale Fisheries Agency)
ASECMAR	Association pour la sécurité maritime (Association for Safety at Sea)
CASAMPAC	Centre d'animation sociale et d'apprentissage des marins pour la pêche artisanale et continentale (Social Iniative and Learning Centre for Small-Scale and Inland Fishers)
CEFOPE	Centre de formation des pêches (Fisheries Training Centre)
CNSP	Centre national de surveillance et de protection des pêches (National Centre for Fisheries Surveillance and Protection)
CONIPAS	Conseil national interprofessionnel des artisans-pêcheurs au Sénégal (Senegalese National Intersectoral Artisanal Fishing Council)
DGPA	Direction générale de la pêche artisanale (Artisanal Fisheries Department)
DGMM	Direction générale de la marine marchande (Merchant Navy Department)
DNPM	Direction nationale des pêches maritimes (National Marine Fisheries Department)
DPSP	Direction de la protection et de la surveillance des pêches (Fisheries Protection and Surveillance Department)
ENEMP	École nationale d'enseignement maritime et des pêches (National Marine Fisheries Training School)
FAO	Food and Agriculture Organization of the United Nations
MPA	Ministère de la pêche et de l'aquaculture (Ministry of Fisheries and Aquaculture)
NGO	Non-Governmental Organization
PNBA	Parc national du Banc D'Arguin (Banc d'Arguin National Park)
PNI	Programme national d'immatriculation informatisée des pirogues (National Computerized Pirogue Registration Programme)
SAR	Search and Rescue
SRFC	Sub-Regional Fisheries Commission (West Africa)
T- NAT	Training Needs Assessment Tool
UNPAG	Union nationale des artisans-pêcheurs de Guinée (Guinean National Artisanal Fisheries Union)

1 ACKNOWLEDGEMENTS

This training manual was prepared with the support of a number of people working in the small-scale fisheries sector. It includes concepts and approaches introduced in those West African countries with a tradition of marine fisheries, where fishing is still mainly done using traditional wooden vessels, i.e. pirogues (dugout canoes and planked boats). Our special thanks go to FAO for funding this work, to Mr Mamanding Kuyateh for his valuable advice, to Per Danielsson for his assistance, to Corvette Captain Mamadou Ndiaye for his ready availability and to all the others who participated directly or indirectly in the preparation of this training manual.

The manual includes elements taken from a very wide range of materials and we would like to thank all those who contributed to the success of this vast project designed to enhance the safety of small scale fisheries in the developing countries.

Our thanks go to the various focal points of the member countries of the Sub-Regional Fisheries Commission (SRFC) and more especially to Captain Dame Mboup, for having allowed us to use all available facilities and to work undisturbed throughout the course of the project.

We would also like to thank local training officers at the Bolama Marine Fisheries Centre in Guinea Bissau for their kind participation and great efforts provided during the training officer training.

Sincere thanks also go to the training officers at Mauritania's École nationale d'enseignement maritime et des pêches (National Marine and Fisheries Training School) at Nouadhibou for their valuable contribution to the development of the manual.

We would also like to thank all the participants in the various workshops in the countries concerned. Their valuable contributions were a great help in the preparation of the manual which, we hope, will be useful in enhancing the safety at sea of small-scale fishermen in West African developing countries.

This document was prepared by the Safety at Sea Project of the Fish Products and Industry Division of FAO's Fisheries and Aquaculture Department.

It was based on the experience gained by FAO, the authors, the Safety at Sea Project in West African countries, and the SRFC. Some of the illustrations used in this publication were originally prepared by other institutions and their collaborators as listed below :

- Senegal's Fisheries Protection and Surveillance Department (Direction de la protection et de la surveillance des pêches (DPSP))
- Senegal's National Marine Training School (École nationale de formation maritime)
- Mauritania's National Marine and Fisheries Training School (École nationale d'enseignement maritime et de la pêche)
- The Sub-Regional Fisheries Commission (SRFC)
- Senegal's Marine Fisheries Department (Direction des pêches maritimes)
- Guinea's Fisheries Department – Conakry (Direction des pêches maritimes de la Guinée – Conakry)
- Guinea-Bissau's Fisheries Department (Direction des pêches)
- Sierra Leone's Fisheries Department (Direction des pêches)
- The Gambia's Fisheries Department (Direction des pêches)

We would especially like to thank Transport Canada whose illustrations were used in this manual's section on navigation.

FAO would like to express its heartfelt thanks to the institutions that provided the data and illustrations which were extremely useful in the preparation of this document.

2 USING THE MANUAL

It is essential that the training teams set up in the SRFC's seven member states to provide training in safety at sea for small-scale fishermen work in cooperation with the small-scale fisheries' officials at the various levels of responsibility.

The proposed training modules give some insight into all the knowledge required to successfully carry out the safety at sea training activities which will benefit the small-scale fishermen.

It would be desirable to have mixed training teams, consisting of fishery officers and professional fishermen.

The items covered range from steps taken to ensure compliance with safety standards in boat-building to meteorology and crew conduct.

The aims of each topic relate to aspects of knowledge that will help to consolidate or corroborate the empirical knowledge about fishermen's safety or, simply, safety in general, gained by experience. The new knowledge acquired could then be shared with actual stakeholders who fish day in, day out.

Some topics are more technical than others and cover practical advice in the use of instruments and safety equipment, and in how to deal with specific cases to do with the safety at sea of small-scale fishers.

Collecting and analyzing data on accidents and breaches of the law in small-scale fisheries are also specific objectives dealt with in this training manual.

Other training topics could be defined depending on the circumstances obtaining in the countries concerned. In this connection, we propose that training officers quickly seek to identify specific training needs with regard to the safety of small-scale fishermen. We have also included in an appendix a tool for quickly identifying training needs **(Training Needs Assessment Tool), referred to as T- NAT.**

This document is a guide and, as such, it summarises the main safety at sea training topics for small-scale fishermen. It is a working manual and aims to help training officers to work towards developing a safety culture in the various countries concerned.

The time-scales proposed are intended as a rough guide. It will be up to training officers to decide on the time needed depending on the topic covered and their trainees' requirements.

Priority must be given to the participatory approach, based on the fishermen's personal experiences, accompanied by examples. Andragogy or adult learning principles must be used to advantage: **adults are capable of learning and do not like being ignorant.**

3 THE CURRENT SAFETY SITUATION IN SMALL-SCALE FISHERIES

Each of the six countries concerned in this project can be classified into one of the following three categories with regard to fishermen's safety: those countries with an operational system of organization, those countries with a modest level of organization and countries where safety structures are now being put in place.

3.1 THE GAMBIA

It is difficult to manage safety measures for small-scale fisheries in The Gambia given that 75 per cent of players in this sector are foreigners. However, it is expected that the review of Gambia's Fisheries Act will take account of all the sub-regional project's concerns with regard to safety at sea. There have also been delays in introducing safety equipment and an insurance system for the benefit of small-scale fishermen.

In the event of accidents in this sub-sector, assistance is provided by the fire service which has first aid and rescue centres in the large fishing areas such as Tanje, Gujur and Bakau. The Tanje training centre has premises at its disposal, but lacks teaching equipment and training tools for awareness-raising and training programmes.

An awareness-raising programme on safety at sea for artisanal fisheries was developed in 2000 by the fire services covering all the country's fishing sites. However, there are no training modules dealing specifically with safety at sea for small-scale fishermen.

Special equipment for safety at sea is not available locally and there are no programmes for providing fishermen with safety equipment, even when the fishermen feel this to be useful and necessary.

Data collection is still rather limited and there are no structures designed to centralise all the data relating to accidents and incidents in artisanal fisheries.

Available data are not recorded. The professional fishermen and the fire services, based in the large landing centres, transmit data from the widely scattered fishing centres to the focal point.

3.1.1 Monitoring vessel safety

Typically, the boats used in artisanal fisheries in the Gambia are traditional ones. In 95 percent of cases, they consist of a hull, made out of a hollowed out log, with the sides built up with wooden planks. A few fibreglass boats do exist, imported from Europe or Asia.

The boats vary in size depending on the type of fishing they are to be used for, the way they are to be used, what the owner wants or, simply, the funds available.

- **Design**: Design plans for the building of these boats do not exist. The carpenter and the fisherman/boat owner simply come to a mutual agreement; the fishery authorities are not involved in the process.

- **Boat Building**: This varies depending on the funds available to the fisherman and the carpenter's technical ability and knowhow. The fishery authorities are not involved in the process.

- **Launching**: The owner is free to launch his boat; no inspection is carried out by the authorities and no certificate of sea-worthiness issued.

- **Sailing**: An experienced fisherman is chosen to sail the vessel. This person has had no training and does not hold any lilcence. There is simply a tacit agreement between the owner and the person in charge of the boat (captain). The latter bears no responsibility in the event of an accident given that there is no legal framework covering such vessels and their crew members.

- **Operation**: An annual fishing permit is issued to every working vessel. Home ports, managed by small-scale fishermen, exist along the coast.

3.1.2 Availability of safety equipment

Safety equipment is not available on board small-scale fishing boats, with good reason, as there are no specialised shops or distribution programmes, with the result that monitoring cannot be effective, even though there are laws governing the wearing of life jackets and vessel seaworthiness. The safety at sea pilot project set up a credit system to allow fishermen to purchase safety equipment.

3.1.3 Engine safety

There are private workshops for the repair and maintenance of outboard motors at every landing site. There are no training modules designed specifically for outboard motor mechanics or vessel captains. Every fisherman maintains his own outboard motor, using his routine knowledge which does not always comply with the manufacturer's recommendations.

3.1.4 Crew safety

At present, the work of small-scale fishermen is not a recognised occupation. This is due to a lack of training centres. Fishermen's knowledge is empriical and passed from father to son. They are also hindered by certain religious beliefs and the risk-taking culture which sometimes take precedence over modern methods of managing safety issues (the wearing of life jackets, the use of radios for communication and GPS for positioning).

3.1.5 Participatory surveillance

The occupational organizations, in conjunction with representatives of the fishery, fire service, police and customs authorities, are involved in participatory fisheries and safety management at each landing site. However, there are no rules and regulations governing the legal recognition of surveillance committees and units.

3.1.6 Search and rescue

From the institutional viewpoint, a search and rescue service exists at macro level. These tasks are carried out by the fire service, but there is no SAR system. At micro and meso levels the fishermen run a voluntary service, but emergency response facilties are non-existant, except at the Bakau, Gunjur, Tanji and Barra landing stages.

3.1.7 Health and HIV/Aids

On the subject of health, there is no dedicated medical service to deal with small-scale fishing-related illnesses. However, there is a national HIV/Aids awareness and support programme for those infected with the disease. There is a diagnostic centre at Tanji, established under the national HIV/Aids programme.

3.2 SIERRA LEONE

The safety of small-scale fisheries comes under the umbrella of the coast guard service which provides assistance in the event of accidents or incidents at sea. There is no specific organization responsible for the safety of small-scale fishers.

Safety equipment is unavailable and small-scale fishermen are unaware of its existence.

There is little or no data collection on accidents and incidents at sea, which makes it difficult to establish a strategy for possible awareness-raising and training programmes for fishers operating in Sierra Leone's numerous estuaries.

Safety is totally ignored in pirogue construction, equipment and use. Reflex action with regard to safety in small-scale fisheries is still absent.

3.2.1 Monitoring vessel safety

- Design: Design plans for the construction of fishing boats do not exist, and the fishery authorities are not involved in the process.

- Boat building: The type of vessel built depends on the resources available to the owner and the carpenter's technical skills and knowhow. The fishery authorities are not involved in the process. There is considerable activity in constructing boats for the movement of people and goods. The boatyards are not regulated and carpenters do not receive any training.

- Launching: The authorities do not carry out any inspection when a vessel is launched for the first time and no certificate of sea-worthiness is issued.

- Sailing: An experienced fisherman is chosen to sail the vessel. This person does not receive any training and has no licence. There is simply a tacit agreement between the owner and the person in charge of the boat (captain). The latter bears no responsibility in the event of an accident, given that there is no legal framework covering such vessels and their crew members.

- Operation: There are no fishing permits; the main activity is the movement of goods and persons between the islands and the neighbouring countries.

3.2.2 Availability of safety equipment

Small-scale fishermen and owners of transport vessels are unaware of the existence of safety equipment for artisanal fisheries. Life jackets are only worn from time to time. There are no specialized shops selling safety equipment and no national programme for supplying such equipment to fishermen.

3.2.3 Engine safety

Privately-run workshops for repairing and maintaining outboard motors are located in Freetown. No training is provided for either motor mechanics or vessel captains. Every owner sees to the maintenance of his outboard, using his routine knowledge which sometimes does not comply with the manufacturer's recommendations.

3.2.4 Crew safety

Fishing is mainly done by foreigners, which explains the authorities lack of commitment with regard to crew safety. No checks are carried out on the number of persons aboard or on the wearing of life jackets.

3.2.5 Participatory surveillance

Co-surveillance is unknown and fishing activities are monitored by the coast guard.

3.2.6 Search and rescue

Search and rescue services are non-existant at macro, meso and micro levels. The fishermen run their own service on a voluntary basis ; emergency response capabilities are non-existant.

3.2.7 Health and HIV/Aids

On the subject of health, there is no dedicated medical service to deal with small-scale fishing-related illnesses. However, there is a national awareness and support programme for those infected with HIV/Aids.

3.3 SENEGAL

The Fisheries Protection and Surveillance Department is responsible for safety in small-scale fisheries.

The following measures have been taken over the past five years to provide solutions to the difficult problems of safety at sea for small-scale fishermen:

- Establishment of a department responsible for the safety of small-scale fishermen (DPSP).
- Creation of a higher level authority in charge of sea safety and security (HASSMAR).
- Adoption of a ministerial decree making it mandatory for those on board undecked vessels to wear life jackets. The Senegalese government subsidises the cost of life jackets.
- Adoption of a ministerial decree covering computerized pirogue registration.
- Adoption of a ministerial decree providing for an annual small-scale fishing permit.

- Adoption of a ministerial decree making it mandatory to install beacons (VMS) on board trawlers.
- Establishment of ten (10) coastal surveillance stations with an operational GMDSS system.
- Acquisition by the Ministry of Marine Economy of two 20 metres long and four 12 metre long fast patrol boats.
- Acquisition of other safety equipment for the benefit of small-scale fishermen (such as distress flares, radar reflectors, first aid kits and magnetic compasses).
- Establishment at various landing sites of co-surveillance committees whose membership will include all the players involved in ensuring the safety of persons and goods.

Some important fishing sites, such as Ouakam, Soumbédioune, Hann, Mboro, Ngaparou and Nianing, are equiped with VHF radios to be able to communicate with secondary fishing and surveillance centres located along the coast.

An awareness-raising and training campaign on safety at sea for small-scale fishers was carried out between 2005 and 2006. It included publicity spots, manuals, televised discussions and posters.

It would be difficult to set up an insurance scheme for small-scale fisheries, given that this sub-sector is not covered by a legal framework, migration is common among small-scale fishermen, and there are numerous landing sites.

Data on small-scale fishing accidents and incidents are passed daily from the coastal stations to the DPSP.

3.3.1 Monitoring vessel safety

A technical committee has been established under the national computerized pirogue registration programme in each landing area for small-scale fisheries. This committee decides whether or not a newly-built vessel is sea-worthy, thereafter carrying out annual inspections and checking whether any major modifications have been made to the vessel which might affect its stability. Each committee comprises a fisherman, a carpenter and an official from the fisheries authority.

3.3.2 Availability of safety equipment

At present, life jackets are available throughout the country. Their cost is subsidized by the Senegalese government and it is required by ministerial decree that they be carried by every fishing vessel. A Bill is currently going through Parliament covering other safety equipment such as radar reflectors, signal lights, fire extinguishers, distress flares and first-aid kits.

3.3.3 Engine safety

Mechanics work privately all along the coast. However, fishermen do not have the required training to ensure that they are using their outboards safely.

3.3.4 Crew safety

At present, the status of ‘‘captain’’ and fisherman is not legally recognized. Small-scale fishermen’s training is informal. Checks are carried out by collector vessels which take the artisanal fishermen on board.

3.3.5 Participatory surveillance

Local fishery committees do exist. They are recognized by law and provide a base for the surveillance and safety committees. The surveillance committees are established by prefectoral decree and include monitoring units set up under local joint fishery management initiatives.

3.3.6 Search and rescue

A search and rescue service exists at macro level, under DPSP’s responsibility. At meso level, the responsibility falls to the surveillance centres which have at their disposal 12 metre long pirogues, 40 HP engines and an operating budget. At micro level, the sites where a joint surveillance scheme is in operation have a safety at sea committee. In the event of accidents, the fishermen provide the committee with a vessel and a captain to carry out initial searches.

3.3.7 Health and HIV/Aids

At national level, HIV/Aids prevention is the responsibility of the health ministry. The health insurance scheme is still an informal one. In some localities there are schemes where families who pay a monthly fee can be examined by a doctor.

3.4 GUINEA BISSAU

Guinea Bissau lacks the structures and institutions to manage sea safety for small-scale fishermen and transport vessels, the latter playing an important role in terms of traffic between the various localities. Responsibility for small-scale fishermen's safety at sea falls to the port authority which issues boat-building permits and sea-worthiness certificates.

Data on accidents and incidents at sea are still few and far between, due to a lack of technical and financial resources. Meso and micro level organizations have neither the premises nor the human resources at their disposal to enable them to gather the data. Roughly 90 percent of small-scale fishermen, most of whom are foreigners, use motorized vessels.

Where Individual and group safety equipment, such as life jackets, radar reflectors, hand-held lights and GPS are concerned, there are not yet any specialzed shops selling these items and programmes to supply safety equipment for small-scale fishermen have not yet been set up in the various localities.

At national level, co-surveillance has not yet been organized and regulated. However, the fishermen at the various sites have organized themselves to manage their fishery resources and the safety of their fellow fishermen.

As regards responsible fishing, the dissemination of information to the players is still poor, and FAO's code of conduct for responsible fisheries is not yet known to everyone.

3.4.1 Monitoring vessel safety

Seaworthiness certificates and fishing permits are issued by the port authority. However, vessels are not subject to safety checks.

3.4.2 Availability of safety equipment

Specialized shops selling safety equipment are few and far between, if they exist at all and, since there are no plans for a national programme to supply these items, any monitoring is impossible at the present time.

3.4.3 Engine safety

There is an artisanal fisheries training centre at Bolama. The training programmes provide modules on outboard motor repair. However, there are not enough funds to meet the cost of training the fishermen.

3.4.4 Crew safety

The monitoring and recognition of fishermen's status are not effective. The vessel owners or captains are responsible for choosing the crews. In the event of an accident, it is the port authority's duty to pinpoint the causes and determine who is responsible.

3.4.5 Participatory surveillance

The various fishermen's camps have their own survsillance schemes, without the involvement of the authorities. Co-surveillance has not yet become part of this sub-sector's fisheries management and safety system.

3.4.6 Search and rescue

There is no search and rescue service at macro level. This role falls to the port authority which has no SAR resources for the moment. At micro and meso levels, the fishermen organize themselves on a voluntary basis to carry out searches, but their response capabilities are virtually non-existant.

3.4.7 Health and HIV/Aids

The HIV/Aids prevention campaign is run nation-wide under a programme managed by the Health Ministry.

3.5 GUINEA

The competent legal authority for the safety of small-scale fishermen is the Agence de la navigation maritime (Maritime Navigation Agency). However, it is the Direction nationale des pêches maritimes (National Marine Fisheries Department) which, technically speaking, is responsible for small-scale fishermen's safety. The Merchant Navy Code contains provisions for the certification of small-scale fishing vessels covering design, construction and launching.

Data on accidents and incidents at sea are gathered by officers attached to the Marine Navigation Agency and sent to the Marine Fisheries Department.

3.5.1 Monitoring vessel safety

At the present time there are no rules or regulations governing the monitoring of vessel safety.

3.5.2 Availability of safety equipment

Small-scale fishing vessels are not equiped with Individual and group safety equipment, such as life jackets, radar reflectors, hand-held lights and GPS. Such equipment is not available locally and there are no programmes to supply these items. However, the NGO ASECMAR has run training activities and awareness campaigns.

3.5.3 Engine safety

There is no effective monitoring of outboard motor safety. Private mechanics work on their own at the landing sites. There is no national programme or training centre for small-scale fishermen.

3.5.4 Crew safety

Even though the status of ''captain'' and that of fisherman are defined in the rules and regulations, there is no effective monitoring, particularly with regard to the loading capacity of small-scale vessels. However, the National Centre for Fisheries Protection and Surveillance is providing training for fishermen to act as informers.

3.5.5 Participatory surveillance

At the present time this only takes place in industrial fisheries, with the recruitment, training and equiping of fishermen informers in the 12-mile zone. The aim here is to identify vessels fishing in zones where trawling is prohibited.

3.5.6 Search and rescue

At macro level the navy is responsible for search and rescue activities. A quick response by search and rescue crews would appear difficult to achieve, given the run-down state of the equipment and financial difficulties. At meso and micro levels, the fishermen use thier own resources to organize themselves to provide assistance.

3.5.7 Health and HIV/Aids

The Health Ministry is developing broad-based prevention programmes. The fishing communities do not benefit from special screening and prevention programmes.

3.6 MAURITANIA

Institutional measures, including measures to boost safety at sea, have been taken in recent years,:

- The establishment of a national maritime rescue plan (adopted by decree), to be implemented by a national sea rescue committee;
- The adoption of a decree covering the coordination of government funds for SAR;

- The establishment of a social assistance and maritime support centre for artisanal fisheries;
- The establishment of two mutual societies (one at Nouakchott and the other at Nouadhibou) whose role is to help those invovled in small-scale fishing activities to purchase equipment;
- The setting up of a study into the development of three landing stages in the south of the country;
- The final preparation and issuing of vessel registration cards in 2008.

An assessment is underway with a view to setting up a suitable insurance scheme for artisanal fisheries.

Data on accidents and incidents at sea are gathered by the Centre for Coordination and Sea Rescue (CCSM), which keeps an up-to-date data base.

3.6.1 Monitoring vessel safety

In an effort to protect fishery resources, the small-scale fishing fleet is limited to 4 022 vessels, each of which must be registered in order to have access to the resources, and must have a permit for whatever type of fishing it is to be involved in.

Boat-building - from the making of the hull to launching – is not monitored by the authorities. However, the technical characteristics of the vessel must be provided when it is registered (Decree R 2954/MP of 03 December 2007).

The competent authorities for vessel monitoring are the DSPCM and the national coast guard.

Decree R 033 of 26 January 1994 prescribes the rules governing fishing vessel seaworthiness certificates and minimum safety requirements for large and small-scale fishing vessels. The decree includes an annex listing the fittings and safety equipment that must be carried aboard large and small-scale fishing vessels.

3.6.2 Availability of safety equipment

Given the high cost of safety equipment and the lack of local demand, there are no shops selling these items. Campaigns distributing life jackets to small-scale fishermen are run regularly by CCSM and FNP.

3.6.3 Engine safety

Except for the sail-powered vessels (called "lanches"), operating within the Banc D'Arguin, the small-scale fishing fleet is 100 per cent motorized.

Repairs and maintenance are carried out by numerous small, private workshops at Nouakchott and Nouadhibou. However, there are no such services close at hand for the other 25 authorized landing sites.

In addition to the PMEDP pilot project which developed training modules for the repair and maintenance of diesel engines (in-boards) and trained about a dozen mechanics, ENEMP and CASAMPAC also provide training in outboard motor repair and maintenance for small-scale fishermen.

3.6.4 Crew safety

Out of an estimated total of 12 000 small-scale fishermen, less than 4 000 have been able to go on capacity-building courses on safety and hygiene as part of their apprenticeship courses. Suitable training modules are currently being produced by ENEMP and CASAMPAC in an effort to improve the situation.

Although the wearing of life jackets is compulsory, this, like many other requirements, is not often obeyed.

Working conditions at sea for small-scale fisheries are, to a large extent, unacceptable. It may be said that safety concerns are not at the top of small-scale fishermen's agenda.

3.6.5 Participatory surveillance

Fisheries monitoring, control and surveillance activities are entrusted to the DSPCM which, although part of the military, is at the service of the Fisheries Ministry. However, it systematically calls upon other players to assist in control and surveillance operations.

Relations between the fishermen and the DSPCM are good. The latter often cooperates with local institutions, such as the FNP, the small-scale fishing communities and the PNBA, in surveillance work. This type of cooperation is termed ‘‘participatory surveillance’’ and can be either formal (sustainable) or informal (*ad hoc*).

3.6.6 Search and rescue

Mauritania has established a Centre for the coordination of search and rescue operations at sea which has a number of human and material resources at its disposal. By law, it can ask other organizations to carry out search and rescue missions at sea.

There has been a clear reduction in the number of fatal collisions and shipwrecks since the strengthening of control and surveillance operations focusing specifically on small-scale fishing zones, and the increasingly effective involvement of CCSM officers.

3.6.7 Health and HIV/Aids

The prevalence of HIV/Aids in the fisheries sector is slightly higher than Mauritania’s national average, which is about 1 per cent. An HIV/Aids prevention campaign does exist at departmental level, headed by a sectoral coordinator. A financial allocation has been obtained under a World Bank-funded programme.

Measures comprise the training of peer group workers and intermediaries to work with a large-scale awareness-raising programme in the small-scale fisher communities.

A number of workshops is held every year and training modules designed to be included in ENEMP training programmes also exist. The Fisheries Department has a five-year action plan.

4 FISHERIES MANAGEMENT

Fisheries throughout the world are over-exploited due to uncontrolled fishing effort. Many solutions are recommended, but these rarely respond to the circumstances obtaining on the ground, whilst the measures taken to comply with existing rules and regulations are inadequate. Responsible fisheries may be the solution for rebuilding stocks and protecting the environment, alongside measures to ensure sustainable livelihoods.

4.1 What is meant by responsible fisheries?

It is the use of fishing methods and techniques which do not endanger the fishery resources and environment, at the same time, providing a sustainable occupation for fishers.

It involves both scientific and technical knowledge, but also requires attitudes and practices geared to maintaining a sustainable industry with, as a final reward, the equitable sharing of the earnings obtained from fisheries.

The authorities and the commercial fishermen must come together to define joint management mechanisms for the benefit of all players, at the same time minimizing the dangers of a gradual destruction of the fragile fishery environment.

4.2 Fisheries development and management

There must be a clearly defined legal and regulatory framework, based on consensual texts.

Scientific studies, based on empirical knowledge (biology, environment, economics and social conditions) must be carried out on the resources and their environment.

An eco-systemic approach must be the preferred method to measure and take account of all the aspects of the system.

Since each site has its own specific problems, the methods used must be tailored to the actual conditions in the targeted locality.

4.3 Role of the authorities and the professional fishermen

The authorities must act as go-between and guarantor of the common interests of all the people. In the case of fisheries, the resources belong to the nation.

Professional fishermen must help to identify the problems clearly and ensure that the strategies defined to resolve them are implemented.

A self-monitoring system may turn out to be effective provided it does not further the interests of one group alone.

The professional fishermen need to find a formal, broad-based discussion framework to include all players concerns.

4.4 Code of conduct and it's application

Fishing is a major source of food. The development which occurred following the Second World War led to concern that the resources would be exhausted.

Despite the provisions of the United Nations Convention on the Law of the Sea (MONTEGO BAY-1982) which called upon States to better manage the resources of their EEZs, over-fishing of the resources has continued. It was in this context that in 1995 FAO recommended a voluntary Code of Conduct for Responsible Fisheries.

The Code sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity.

4.5 Objectives of the code of conduct

Fisheries, including aquaculture, provide a vital source of food, employment, recreation, trade and economic well-being for people throughout the world and for present and future generations, and should therefore be conducted in a responsible

manner. The Code recognises the nutritional, economic, social, environmental and cultural importance of fisheries, and the interests of all those concerned with the fishery sector. The Code takes into account the biological characteristics of the resources and their environment and the interests of consumers and other users. States and all those involved in fisheries are encouraged to apply the Code correctly.

The objectives of the Code are to:

a. establish principles, in accordance with the relevant rules of international law, for responsible fishing and fisheries activities, taking into account all their relevant biological, technological, economic, social, environmental and commercial aspects;

b. establish principles and criteria for the preparation and implementation of national policies for responsible conservation of fishery resources and fisheries management and development;

c. serve as an reference tool to help States to establish or improve the legal and institutional framework required for the exercise of responsible fisheries and to formulate and implement appropriate measures;

d. provide guidelines which may be used where appropriate in the formulation and implementation of international agreements and other legal instruments, both binding and voluntary;

e. facilitate and promote technical, financial and other cooperation in the conservation of fishery resources and fisheries management and development;

f. promote the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities;

g. promote the protection of living aquatic resources and their environments, and coastal areas;

h. promote the trade of fish and fishery products in comformity with relevant international rules and avoid the use of measures that constitute hidden barriers to such trade;

i. promote research on fisheries as well as on associated ecosystems and relevant environmental factors ; and

j. provide standards of conduct for all persons involved in the fisheries sector.

4.6 Nature and scope of the code

The Code is voluntary, but based on international law, especially the United Nations Convention on the Law of the Sea of 10 December 1982.

The Code is directed toward members and non-members of FAO. It provides principles and standards applicable to the conservation, management and development of all fisheries,

It also covers the capture, processing and trade of fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management.

The capacity of developing countries to implement the recommendations of the Code should be duly taken into account.

In order to achieve the objectives of the Code and to promote its effective implementation, countries, relevant international organizations, whether governmental or non-governmental, and financial institutions should give full recognition to the special circumstances and requirements of developing countries, including in particular the least-developed among them, and small island developing countries. States, relevant intergovernmental and non-governmental organizations and financial institutions should work towards the adoption of measures to address the needs of developing countries, especially in the areas of financial and technical assistance, technology transfer, training and scientific cooperation and in enhancing their ability to develop their own fisheries as well as to participate in high seas fisheries, including access to such fisheries.

4.7 Implementation, monitoring and up-dating of the code

The Code shall be implemented in each country concerned and shall be adapted to the local context, in line with the changing situation.

The Code shall be publicized with the help of trade organizations and grass-roots players who must be kept informed of any changes made.

4.8 Special needs of the developing countries

The developing countries have specific needs, such as the eradication of poverty and under-nourishment. These factors must be taken into account through the introduction of income-generating activities.

4.9 Biology and environment

Fish have special breeding areas (spawning areas) where conditions for juvenile development are favourable. One such area is mangroves.

They also have feeding areas where they can chase their prey and feed, and

Dispersal areas where they can escape their predators and from where they can eventually begin their migration.

Some species live on or close to the sea-bed (demersal species), others live in the upper layers of the open sea (pelagic species).

4.10 Environment and resource protection

Coastal habitats need to be protected to ensure the sustainable use of biological resources.

Environmental pollution could change species' breeding cycles. Measures must be taken against all forms of pollution.

4.11 Biodiversity and biodiversity conservation

What is biodiversity? How can it be conserved?

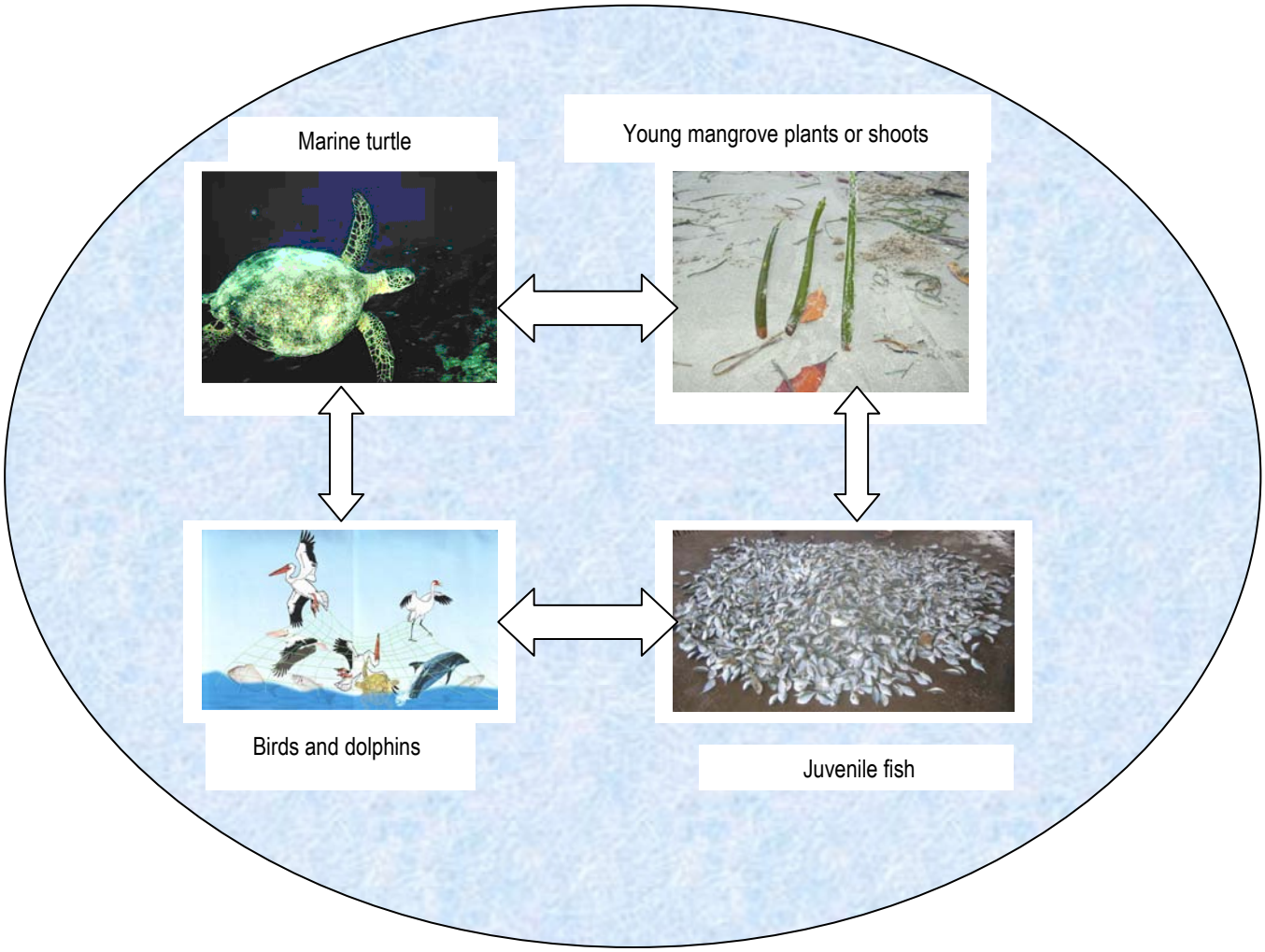


Figure 1: Marine biodiversity

4.11.1 Biodiversity

The word biodiversity refers to the diversity of the living world. However, where the marine environment is concerned, it may refer to all the forms of plant and animal life found there.

Knowledge of marine biodiversity may help in the management of the species exploited. It could also help to conserve and protect over-exploited or endangered resources.

Indeed, the search for rare species could encourage fishermen to go further out to and remain longer at sea, thereby putting their own safety and that of their vessels at greater risk.

4.11.2 Biodiversity conservation

This may be done naturally, by protecting species and habitats, or through the establishment of nature parks and protected marine areas or reserves. **Human activities must be controlled in order to protect the marine environment**.

Exploitation of juveniles or immature species must be prevented and spawning areas protected.

5 REGULATING SAFETY AT SEA

Small-scale fishing vessels vary in size, depending on what they are used for, the fishing activity they are involved in and the zone in which they fish. It must be noted that there is no adequate legal framework for artisanal vessels.

Some regulations and a legal framework have been implemented to fill the gaps in safety provisions up- and down-stream of the marine fisheries sector, but these have little or no relevance to small-scale fisheries.

5.1 International rules and regulations

Steps are underway to regulate safety at sea, but much remains to be done for small-scale vessels in the developing countries.

5.1.1 FAO/ILO/IMO Voluntary Guidelines for the design, construction and equipment of small fishing vessels

These Guidelines, prepared in 1980 by FAO, ILO AND IMO, cover the design, construction and equipment of vessels of between 12 and 24 metres in length.

It is worth mentioning that FAO, ILO and IMO are currently preparing Safety recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels.

5.1.2 FAO/ILO/IMO Document for Guideance on Training and Certification of Fishing Vessel Personnel

Aim: to provide guidelines for persons responsible for preparing and revising training courses for fishing vessel personnel.

Vessels covered: vessels of less than 24 metres in length or vessels equiped with engines of less than 750 kW.

5.1.3 International Convention on Safety of Life at Sea (SOLAS)

This was the first international convention on safety at sea. It was drawn up in 1911, following the loss of the Titanic, and adopted in 1914.

The SOLAS Convention prescribes the minimum standards of construction, equipment and operation of vessels.

SOLAS does not apply to fishing vessels, wooden, primitively constructed vessels, and non-motorized vessels

Most of the fishing and transport vessels used in the developing countries are not taken into account.

Fishing vessels are explicitly excluded from some conventions.

Most conventions do not apply to vessels of less than 24 metres in length.

Covered vessels represent little more than 1 per cent of the world's fishing fleet.

However, there is an international willingness to introduce a legal and technical framework aimed at taking concerted action to improve fishing vessel safety.

5.1.4 1995 International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW 95- F)

Aim: to set minimum training standards for the crews of fishing vessels of more than 24 metres in length and engine power of 750 kW and over.

This convention has not yet entered into force.

5.1.5 Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977

This was the first international convention on fishing vessel safety.

The Protocol contains safety requirements for the construction and equipment of new decked vessels of 24 metres in length and over.

Existing vessels are covered in respect of radio and navigational equipment requirements as well as in respect of emergency procedures, musters and drills.

The Protocol has not yet entered into force.

5.1.6 1982 United Nations Convention on the Law of the Sea

This convention defines the rights and obligations of coastal states.

All States are required to take the necessary measures to ensure the safety at sea of vessels flying their flag, particularly with regard to:

- The construction, equipment, and sea-worthiness of such vessels ;
- The membership, working conditions and training of crews, bearing in mind applicable international instruments, the use of signals, good communications and the prevention of collisions.

5.1.7 Code of Conduct for Responsible Fisheries

The Code recognizes the importance of safety and covers working and living conditions, health, education, training, the construction and equipment of fishing vessels, search and rescue and the notification of accidents.

Advantage: It is flexible and voluntary.

5.1.8 IMO Code for investigations into accidents and incidents at sea

It recommends the introduction of a system for the investigation of accidents at sea, for the purpose of establishing the circumstances to be taken into account, determining the causes of the accidents and formulating appropriate safety recommendations.

5.1.9 1979 IMO International Convention on Maritime Search and Rescue

Coastal countries are required to set up an effective sea search and rescue system (SAR), with operating procedures and emergency response capabilities.

5.1.10 2007 ILO Recommendations concerning work in the fisheries sector

The following recommendations concern all sizes of commercial fishing vessels operating in water courses, lakes or channels, with the exception of vessels involved in subsistence or recreational fishing :

- Definition of the responsibility of fishing vessel owners and skippers;
- Minimum working conditions required on board fishing vessels;

- Crews' conditions of service and rest periods;
- Medical care, health protection and social security;
- The implementation of national regulatory policies on safety which presupposes a number of provisions in several areas.

5.2 National rules and regulations

National rules and regulations designed to ensure the safety of persons and goods have been introduced in each of the countries concerned. Indeed, each country has a fisheries code regulating fishing activities. However, some deficiencies have been noted with respect to the items below :

Wearing of life jackets: most countries do not have regulations making the keeping or wearing of life jackets compulsory.

Other safety equipment: Absence of regulations for small-scale fisheries.

Radio communications (VHF): Absence of regulations for small-scale fisheries.

Vessel construction standards:Absence of regulations for small-scale fisheries.

Captain and fishermen: Absence of regulations (crews' training and role).

As well as the absence of national regulations on the use of safety equipment, such equipment simply does not exist in many countries, in addition to which, the work of small-scale fishermen is not considered a genuine occupation.

6 PARTICIPATORY SURVEILLANCE

Figure 2: A participatory surveillance unit takes office

6.1 Concept of participatory surveillance

Participatory surveillance, otherwise known as co-surveillance, is the implementation of methods and techniques by a team comprising both fishery officers and professional fishermen. It is a local approach designed to involve fishers and make them aware of their responsibilities. The skills of both groups are used to ensure that fishery laws and regulations are obeyed.

This approach may be called concerted surveillance, aimed at achieving effective responses, given that the fishermen know each other and are aware of the good as well as bad fishing practices.

6.2 Membership of a co-surveillance committee

Where possible, a co-surveillance committee should comprise:

- a chair person;
- a secretariat;
- members.

Aptitude and availability must be the criteria for candidates, as they may be required to act at any time and in all circumstances.

This type of organization may take other forms in some countries, depending on the circumstances in some localities.

The surveillance committees operate through the co-surveillance units.

6.3 A co-surveillance unit's areas of intervention

Interventions may take place at sea or on land (fish landing, processing or selling points, and factories).

6.3.1 At sea

The unit's operations must be limited to a marine area defined by a local co-management initiative and marked out, if possible, by buoys (geographical coordinates). This area may be a prohibited zone, a reserve, a protected marine site, a spawning ground or simply a community area.

6.3.2 On land

The unit may, for reasons of effectiveness or because its resources are limited, conduct inspections along the beaches (e.g. to prevent the extraction of marine sand), at landing sites (immature prawns or non-respect of quotas), at processing sites and factories (use of immature species and/or public health issues), and at local points of sale (fishing by use of explosives).

Activities designed to raise awareness of safety at sea must be carried out among fishers' families so that they can be the first to raise the alarm should the fishermen fail to return from fishing trips, thereby triggering a search and rescue response.

Paragraph **12.1** explains in detail the procedure to be followed to make inspections more effective.

6.4 Technical means of intervention

In addition to the use of human resources (i.e. measures taken by members of the co-surveillance unit), other methods are necessary:

- Mobile methods (boats, inflatable dinghies, etc.);
- Monitoring equipment (GPS, maps, measuring instruments, etc.).

Figure 3: Using human resources for **good participatory surveillance**

6.5 Legal means

For surveillance to be effective and trouble-free, the rules and regulations must be at the core of any actions taken:

- The laws and rules and regulations in force governing fisheries, the environment and fishermen's safety must be taken into account.
- The unit must be legitimate (establishment, method of operation, rules of procedure, etc.).
- The Fisheries Act in force in the country and supporting regulations must be taken into account.
- Ministerial or prefectoral decrees, etc must be taken into account.

In some countries, unit members are recognized by their dress and badges issued by the competent authorities.

7 SAFETY IN SMALL-SCALE FISHERIES: VESSELS, EQUIPMENT AND ENGINES

Safety in small-scale fisheries must be all-encompassing, i.e. safety measures must cover vessels, engines and equipment. If we are to achieve a safety culture, awareness-raising and the provision of training for the persons involved must be a continuous process in time and space, and must include the use of various supports.

7.1 Vessel safety

In addition to international rules and regulations, each country must take its own measures to ensure the safety of persons and goods throughout the length and breadth of its territory.

It may be said, simply, that safety involves a body of regulatory, technical and administrative measures so that a vessel can go to sea and work at sea without endangering human lives and material goods. Other definitions may be used depending on the context (for example,the rescue at sea and treatment of the injured have become integral parts of sea safety).

Safety must be a factor in the design, construction, equipment and operation of small-scale fishing vessels.

Figure 4: Artisanal fishing vessels at Soumbédioune, Dakar.

In the SRFC member countries, vessels are built mainly of wood. This poses an initial risk as soon as the vessels come into contact with water, as well as problems in terms of maintenance and sustainability.

Every pirogue has its own equipment depending on the type of activity it is used for and the number of persons it carries.

Necessary minor equipment includes rope (150 to 200 metres in length), anchors, paddles, boathooks and bailers. Small wooden fishing vessels must undergo maintenance every six-months (caulking and painting).

They must also carry a tool box containing at least one hammer, nails and a piece of thick canvas or plastic about 1 sq.metre in size, to stop leaks, if necessary.

7.2 Safety equipment

This is the equipment carried on the pirogue and designed specifically for crew safety.

Figure 5: Life jackets

The wearing of life jackets is mandatory

- **Never put to sea without life jackets even in calm weather, as the state of the sea may vary during the course of the day.**

Other items of safety equipment are also necessary. These are listed in Figure 6.

Figure 6: Other safety equipment

1. Radar reflectors
2. First-aid kit
3. Flash lamp

4. Distress flares
5. Binoculars
6. VHF radio (a mobile phone (cellphone) may also be used)
7. GPS
8. Torch
9. Mirror
10. Orange smoke device

This list is neither exhaustive nor limited. Vessels could also carry a sea anchor, paddles, a sail and empty containers.

Lifebuoys should also be carried if there is enough room for them on the vessel.

Life buoys (Figure 7) are very effective in the event of someone falling overboard. They are easy to use from the vessel.

Figure 7: Life buoy

They may be used only once or many times. They are particularly useful in the event of someone falling overboard by night or by day. If life buoys are not available, a 100 metre length rope fitted with a large floater may be used (Figure 8).

Figure 8: Rope and large floater

7.3 Engine safety

It is important that the engine is kept in good operating order so as to prevent breakdowns and to ensure safety at sea. The engine should be firmly fastened to the vessel in such a way as to prevent it falling off.

At present, engines are marketed by the private sector in the SRFC countries.

Mechanics do not receive any special training in engine repair and their workshops contain merely an assortment of non-specialist tools.

For some types of breakdown, the fishermen are as well-equiped as the mechanics. It is essential that the engine power matches the size and capacity of the vessel.

The captain or the mechanic on board must be capable of undertaking the following tasks:

7.3.1 Fuel/oil mixture

- The mixture must be prepared before it is put into the tank ;
- First the oil, then the petrol is put into the tank and mixed by shaking ;
- Oil/fuel ratio:

	Oil : petrol
Running-in	1:25
Normal	1:100 to 1:50

- ✓ **Avoid using a different oil from that recommended by the manufacturer**
- ✓ **Insufficient oil may cause the piston to seize up**
- ✓ **Too much oil may cause poor combustion (carbon deposits)**

Figure 9: Oil/fuel ratio for outboard motors

7.3.2 Checking the fuel system

Leaks in the carburettor, pump, tank, pipes and filter must be checked.

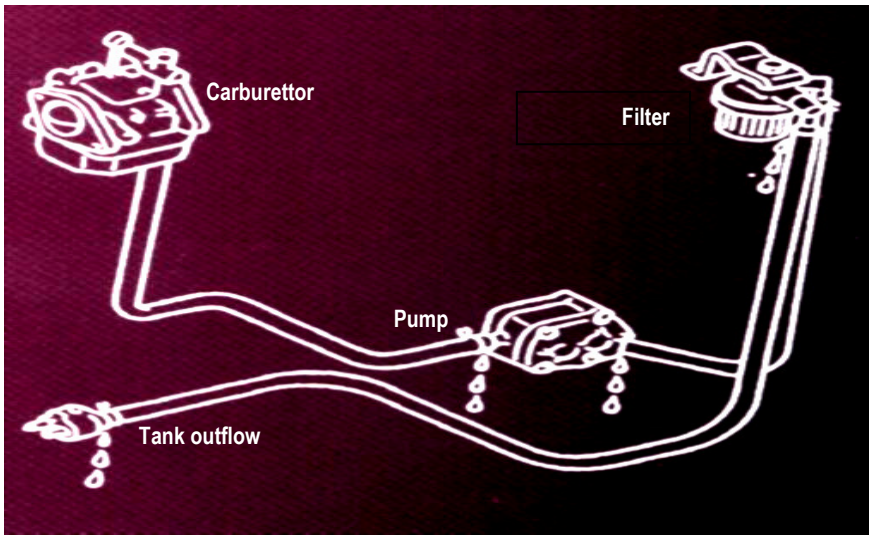


Figure 10: Fuel system circuit in an outboard motor

7.3.3 Draining and replacing gear oil

It is sometimes necessary to replace the gear oil. The stages of this operation are as follows:

- Slightly tilt the outboard motor;
- Place a container under the drainage plug;
- Unscrew the drainage plug, then unscrew the oil level plug and drain the gear oil;
- Move the outboard back to the vertical position;
- Fill the gear oil through the drainage hole until it begins to overflow through the dipstick hole;
- Use oil of the recommended viscosity (e.g. : SAE 90);
- Replace the oil level plug, followed by the drainage plug.

Follow the oil change frequency recommended by the manufacturer

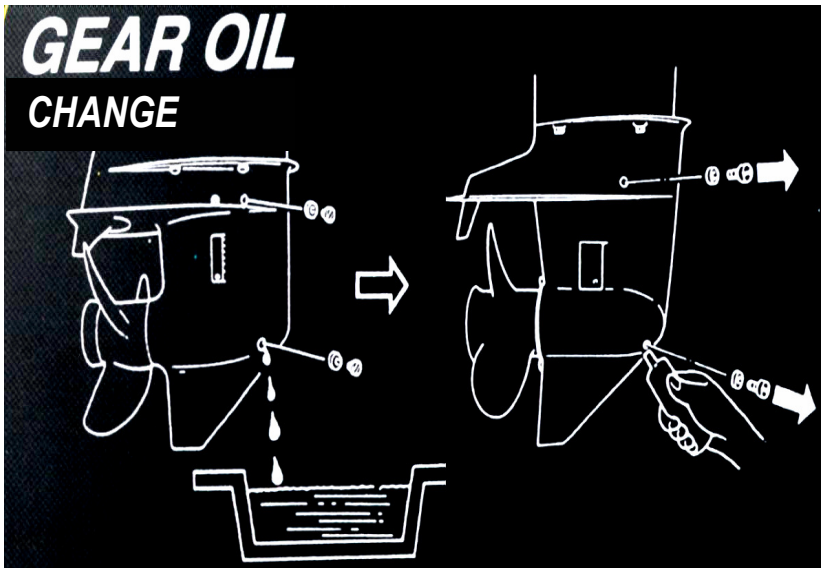


Figure 11: Draining and replacing gear oil

7.3.4 Cleaning the filter

If poor quality petrol is used, the filter may become clogged. If this happens, dismantle the filter and wash it in clean petrol.

Replace or clean the fuel filter:

- After every 20 hours of engine running time or once a month ;
- Dismantle and carefully clean with petrol ;
- Clean often when petrol quality is poor.
- Reassemble ;
- Make sure that there are no leaks.

For a diesel engine:

- Check the oil filter weekly.

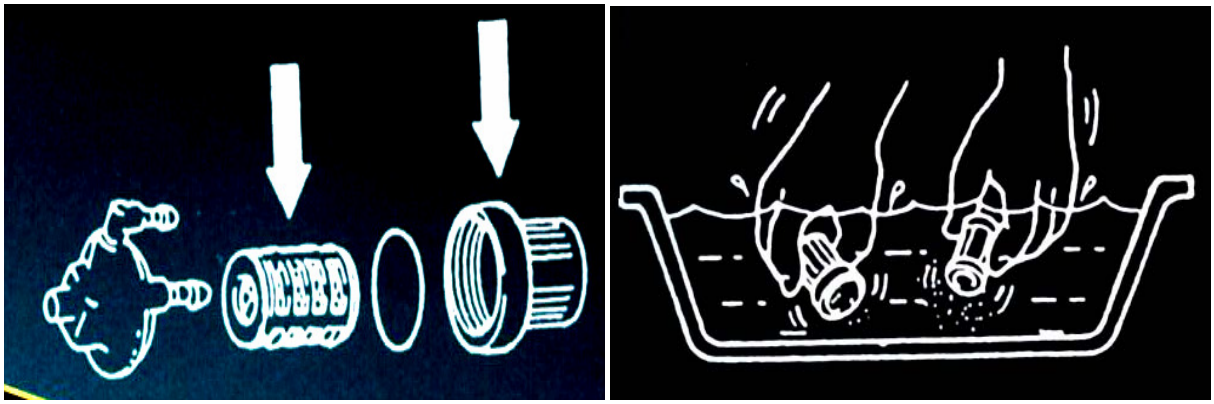


Figure 12 : Dismantling and cleaning a filter

7.3.5 Replacing an anode

Zinc anodes protect against corrosion and the effect of electrolysis. Take off and scrape the surface every three months for more effective protection.

They must be replaced if wear and tear are excessive. Do not lubricate, grease or paint an anode as this will prevent it from working properly.

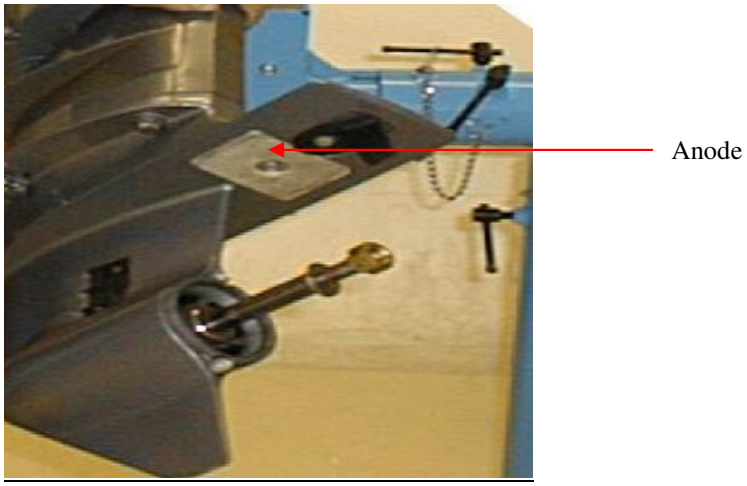


Figure 13: Location of anodes

7.3.6 Start up, running and stopping

The following precautions are necessary for the safe use of the engine:

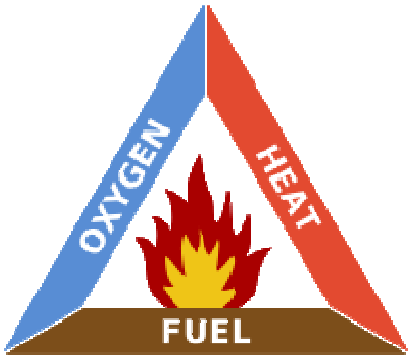
- Have the manufacturer's manual at hand ;
- Handle petrol with care as it is extremely inflammable. Pay attention to leaks (fire risk);
- Have the standard tools available: tool kit, emergency start-up rope, spare spark plugs, flash lamp, spare batteries, propeller pin, etc.
- Carry out regular maintenance work on certain key elements of the engine.

7.4 Fire prevention

Fires often occur on small-scale fishing vessels due to the use of petrol on board (e.g. filling the petrol tank or preparing meals on board).

7.4.1 The fire triangle

The following three elements must be present in order to cause a fire : fuel, a combustible substance (oxygen from the air) and an energy source.



To prevent an outbreak of fire:

- ✓ **Never mix the three cpmponents of the fire triangle (fuel, oxygen and heat)**

Figure 14: The fire triangle

In order to prevent fire, one of the components of the fire triangle must be removed.

7.4.2 Different types of fire

The four types of fire that may be encountered are listed in the table below :

Class	Name	Description
A	**Fires of solids or dry fires**	These are fires of slow- or fast-burning dry materials such as charcoal, wood, cotton waste, cloth and paper.
B	**Fires of liquids or oily fires**	These are fires of liquids or liquifiable solids (petrol, oil, fuel oil, greases etc).
C	**Gas fires**	This type of fire involves gases or vapours, such as hydrogen (pure or a mixture, as in mains gas), propane or butane, etc.
D	**Metal fires**	These are fires of combustible metals (such as aluminium, magnesium, potassium) for which special methods of extinguishing are required.

There are five extinguishing agents for the various types of fire:

- Water: used for Class A fires.
- Water + additive: used for Class A and B fires.
- Powders: used for Class A, B and C fires.
- $C0^2$: used solely for Class B fires.
- Special powders: used for Class D fires.

7.4.3 Different types of fire extinguishers

Every type of fire needs a different type of fire extinguisher. Class A and B fire extinguishers are suitable for fishermen. It is recommended that purchasers seek expert advice when purchasing a fire extinguisher.

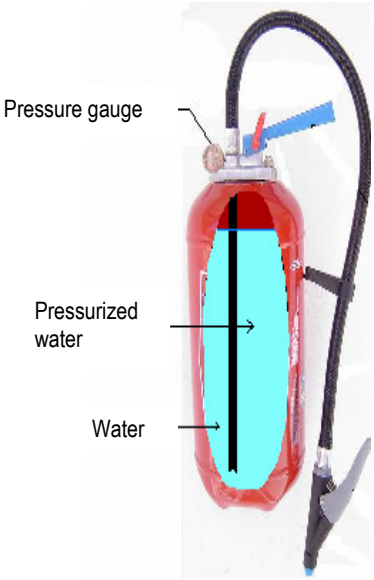


Figure 15: Water extinguisher

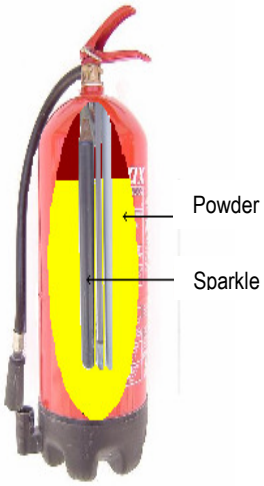


Figure 16: Powder extinguisher

NB: To use a fire extinguisher as effectively as possible, pull the trigger, stand at a distance of two metres from the fire, aim at its base and gradually move your aim upwards.

The table below summarizes the seven main situations and causes of distress.

Initial problem	Solution	Aggravated situation	Consequence
Engine breakdown	Repair the engine	No tools, no spare parts	Drifting
Break in fuel supply	Fuel reserve	No spare engine	Drifting
Loss of bearings	Magnetic compass or navigation kit	No magnetic compass and no navigation kit	Drifting
Leak	Water pump or hand bailer	No pump and no bailer	Danger of sinking
Sudden change in weather	Seaworthy vessel and good seamanship	Unseaworthy vessel Poorly-trained seamen	Potential loss of life
Accident or injury	First aid	No first-aid kit	Potential loss of life
Fire on board	Fire extinguisher	No fire extinguisher	Risk of large fire

It must be borne in mind that human errors are the main causes of accidents at sea.

8 SMALL-SCALE FISHING OPERATIONS

This chapter provides some basic knowledge for people who find themselves required to sail a vessel. Please note that the subject is not treated exhaustively here.

8.1 Using charts (practical work)

Chart work must be accurate. It is easy to imagine the consequences of any lack of accuracy.

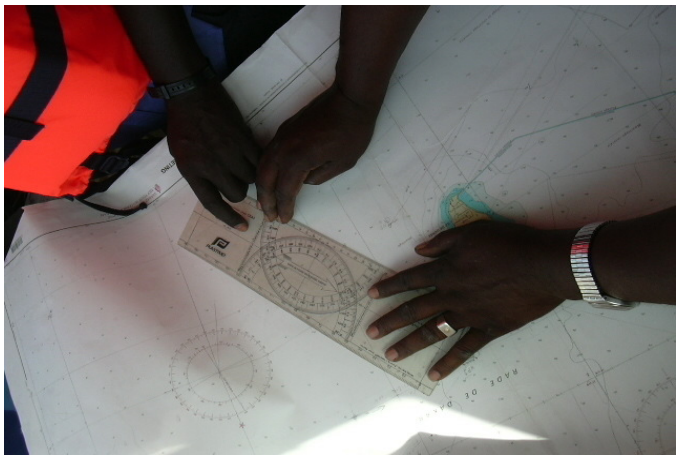


Figure 17: Using a Crass ruler on a chart

8.2 Navigation by dead reckoning

Navigation using dead reckoning involves all the procedures required to determine the position of a vessel, only taking into account surface water speed, course, time of the journey and point of departure. This will give the position the vessel should be in after having sailed for a given time

Every captain must be capable of determining distance travelled and speed during training sessions.

8.3 Finding one's bearings using the stars

It is possible to find one's bearings using the stars. There are several methods for this.

8.4 True course and actual course

Having plotted the course on the map between two points, the navigator will merely have to point the bow of the vessel in the desired direction. The true course is the angular difference, in degrees, between it and true north.

The true course is measured in degrees from 0 to 360° in a clockwise direction. Only if there is neither wind nor current will the true course and the actual course be one and the same. The vessel moves in the direction in which it is pointed.

8.5 The magnetic compass (exercise: description, use)

The magnetic compass should be seen as the essential tool in coastal navigation. Every action or measurement is done with the aid of a magnetic compass. A course cannot be followed without one.

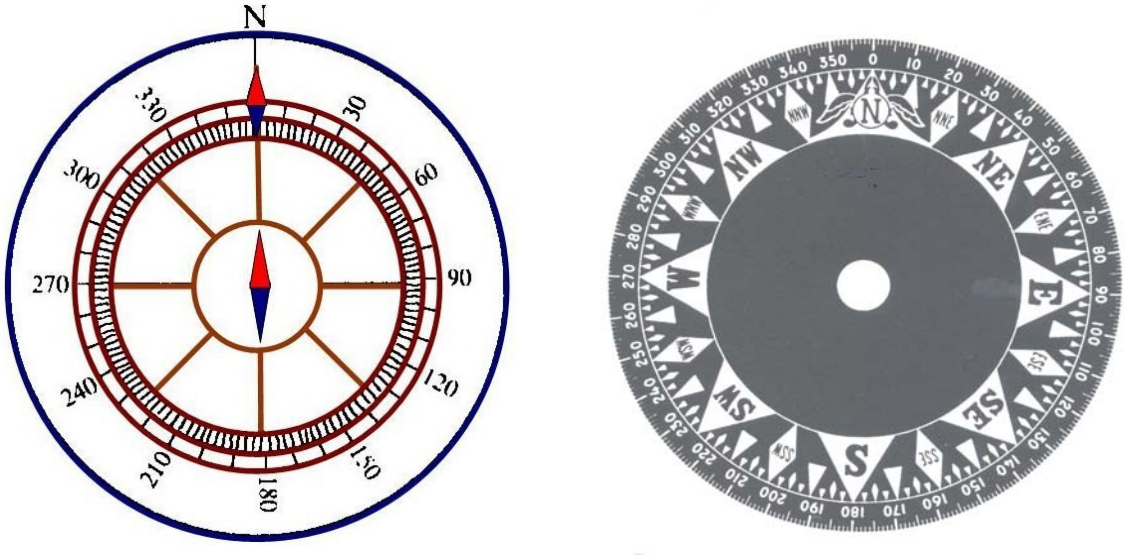


Figure 18: A magnetic compass

8.6 GPS

The GPS is a positioning system using 24 satellites in stationary orbit around the earth. This system makes it possible for users to determine their position at any point on the globe with great accuracy.

Advice: Practical exercises will be necessary and these will depend on the types of GPS available in the locality concerned.

The GPS system

The GPS is subdivided into three segments as follows :

- A spatial segment
  - This comprises 24 satellites on 6 orbits; 4 satellites rotate around each orbit.
- A control segment
  - The satellites are controlled and monitored from terrestrial stations located at : Colorado Springs; the Ascension Islands to Diego Garcia; the Marshall Islands; and the Hawaiian Islands.
- A user segment (seafarers, pilots, drivers, etc.).

Using a GPS

Initialisation and conditions for use*:*

Initialisation is required in the following cases:

- The first time a new GPS is used.
- The receiver is switched off and moved more than 900 km from the previous position.
- The receiver's memory has been deleted with the loss of all the memory's recorded data.

Page display

As soon as the GPS is turned on , the **welcome page** appears, while the testing process continues.

This page is soon replaced by the **status page.** This shows users the accessibility of the satellites.

The Ezinit message appears automatically if the GPS needs to be initialized. It may reappear in use mode if **the antenna is hidden.**

Finding the satellites

This takes place in three stages:

- No indicator of signal power : the GPS is looking for the satellite.
- Signal power indicator empty: the GPS has found the satellites and is gathering the data.
- Signal power indicator full: the GPS has gathered the data needed for it to use the satellites.

The position page: This shows us : our position (where we are), our direction and our speed when we are moving.

How to mark a position : *(refer to the GPS instruction manual)*

Make sure that you are in navigation 2D or 3 D (error message ‘‘no position’’).

The map page: This shows the points as on a map and allows users to see routes and points.

The compass page: This page provides guidance when a destination point is selected.

The GO TO function

This allows users to go to a recorded point, with indications on route information (speed, course, time of arrival, time remaining, distance, etc.).

It is very useful in search and rescue operations at sea.

Based on your speed, as you approach your destination, a recorded message and/or a visual message lets you know that you are arriving at your destination.

Other information, such as the times of sunrise or sunset, may also be shown on your GPS.

Do not hesitate to consult your GPS manufacturer's manual and seek the support of an experienced user.

8.7 Rules governing steering and navigating

International rules and regulations for the prevention of collisions at sea apply to all vessels on the high seas and in all adjacent waters accessible to shipping.

8.7.1 General

Definition of ship: the word ship refers to any type of craft or vessel, including craft without draught, WIG craft and hydroplanes, used or likely to be used as a means of transport on water (Rule 3).

This means that small-scale fishing vessels are considered to be ships.

Since routes at sea are not plotted as they are on land, danger may come from anywhere. This is why seafarers must be constantly on watch, i.e. keeping a close and constant look-out by sight and hearing (Rule 5).

Every vessel shall at all times proceed at a safe speed so that it may come to a stop within a distance adapted to the circumstances and conditions prevailing at the time (Rule 6).

All ships must use all available means adapted to prevailing circumstances and conditions to determine the risk of collision. If there is any doubt about the risk of collision, it must be considered that the risk exists. (Rule 7).

Any manoeuvre taken to avoid a collision must, if the circumstances allow, be carried out without hesitation, in good time and in accordance with good maritime practice (Rule 8).

8.7.2 Narrow channels and fairways

Vessels of less than 20 metres in length and sailing vessels shall not impede the passage of a vessel which can safely navigate only with a narrow channel or fairway.

Vessels engaged in fishing shall not impede the passage of other vessels navigating within a narrow channel or fairway.

8.7.3 Restricted visibility

If you cannot see other vessels because of fog or bad weather, reduce your speed, give an appropriate sound signal, navigate with extreme care and be prepared to stop (in an area of restricted visibility there is no priority) (R-19).

8.7.4 Order of priority

In navigation, privileges (priorities in seafaring language) are governed by the “rules of the road” or depend on vessel type, which may restrict its ability to manoeuvre.

In the list below vessels are placed in order of priority (from high to low) :

- Vessel not in command
- Vessel whose ability to manoeuvre is restricted
- Vessel handicapped by its draught
- Vessel engaged in fishing
- Sailing vessel
- Power-driven vessel underway.

Practically speaking, small, power-driven vessels, like the small-scale fishing pirogues widely used by fishermen, fall into the least privileged category, which is only fair, since they are among the most easily manoeuvrable.

8.7.5 Most common scenarios

- Overtaking another vessel (R-13)

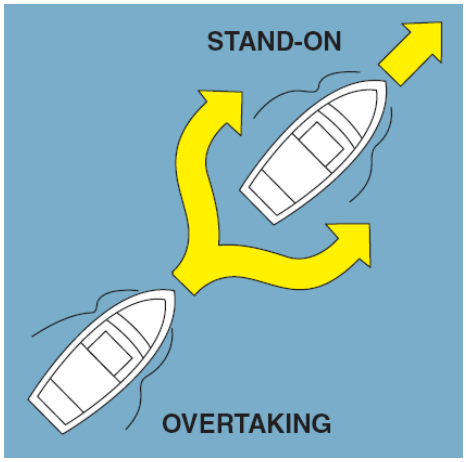


Figure 19: The vessel being overtaken (stand-on) shall maintain its course and speed.

The overtaking vessel must keep clear of the stand-on vessel, giving it a wide berth as it overtakes from either port or starboard sides.

- Head-on situations (R-14)

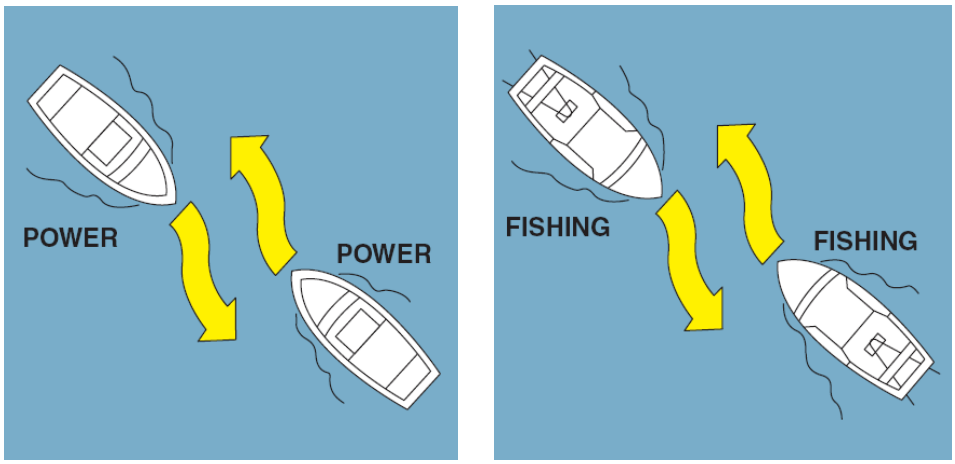


Figure 20: Meeting another vessel head-on (R-14).

If two power-driven vessels meet head-on, both must give way by altering their course to starboard.

If a power-driven vessel meets a vessel engaged in fishing head-on, the power-driven vessel must give way. The fishing vessel should maintain its course and speed (R-18).

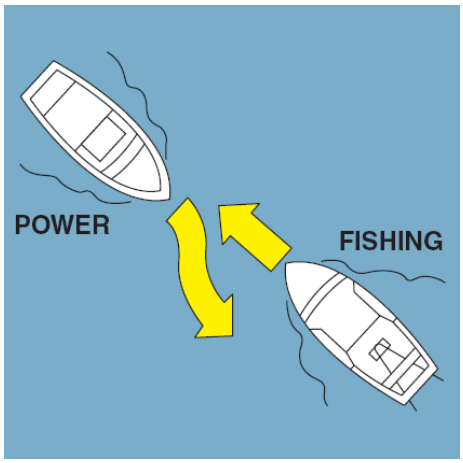


Figure 21: Vessel engaged in fishing and power-driven vessel.

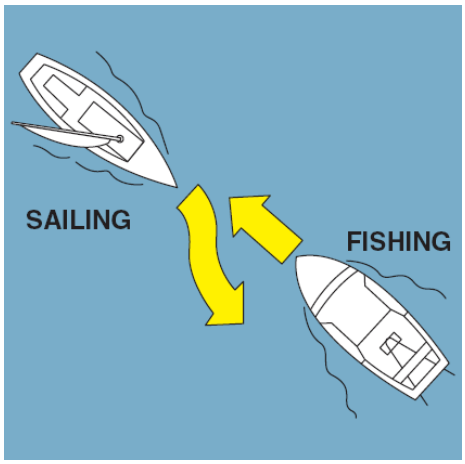


Figure 22: Fishing vessel and sailing vessel

If a sailing vessel meets a vessel engaged in fishing head-on, the sailing vessel must give way. The fishing vessel should maintain its course and speed (R-18).

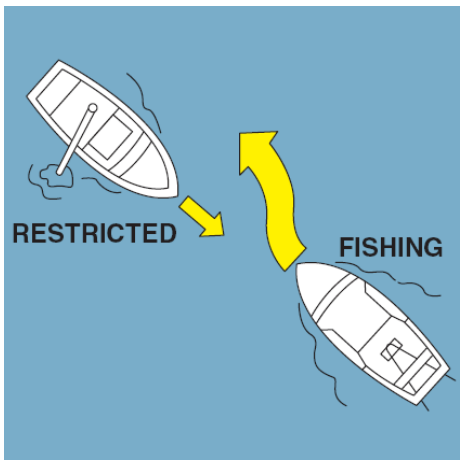


Figure 23: Vessel engaged in fishing and a restricted vessel

If a vessel engaged in fishing meets a restricted vessel head-on, the fishing vessel must give way.

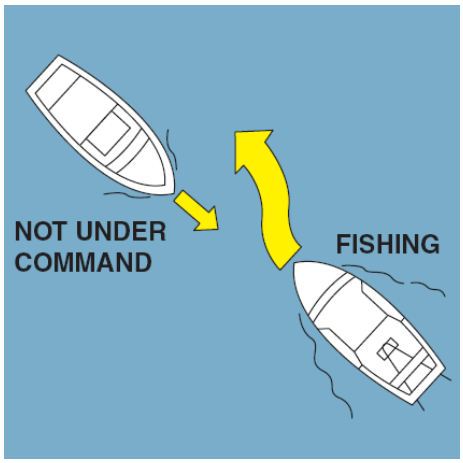


Figure 24: Vessel engaged in fishing and vessel not under command

If a vessel engaged in fishing meets a vessel not under command head-on, the fishing vessel must give way.

- Crossing the path of another vessel (R-15)

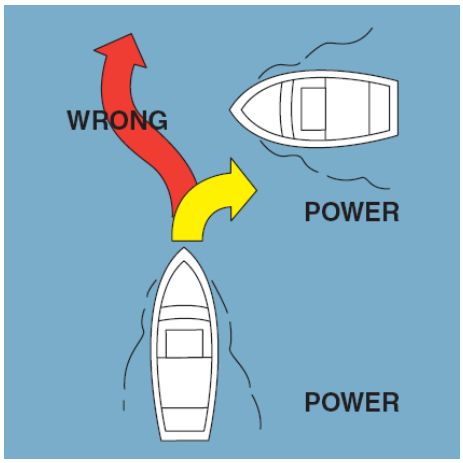


Figure 25: Vessels whose paths cross

A power-driven vessel approaching another power-driven vessel on its own starboard side must give way and avoid crossing ahead of the other vessel.

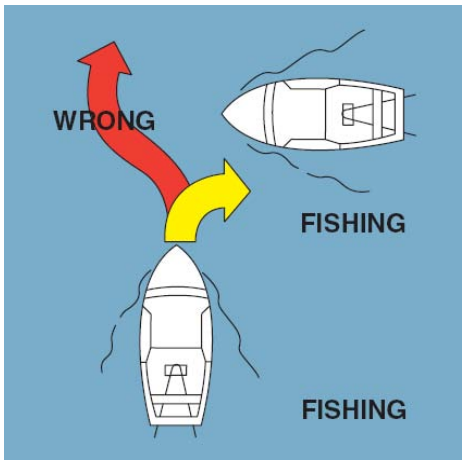


Figure 26: Vessels engaged in fishing whose paths cross.

A vessel engaged in fishing approaching another vessel engaged in fishing on its own starboard side must give way.

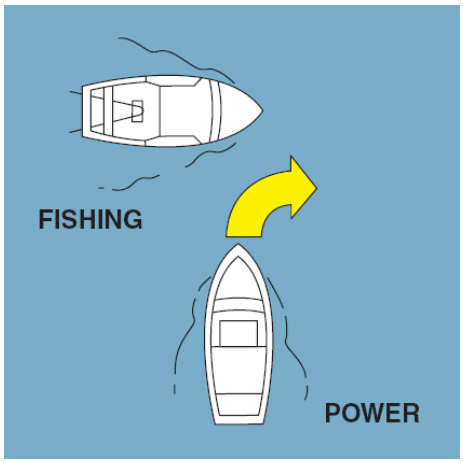


Figure 27: Vessel engaged in fishing and power-driven vessel

A power-driven vessel approaching a vessel engaged in fishing on **either** of its sides must give way (R-18).

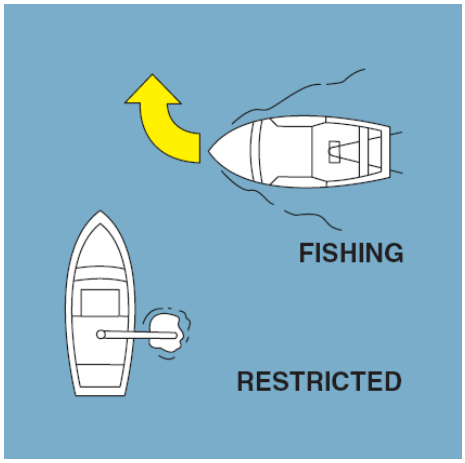


Figure 28: Vessel engaged in fishing and restricted vessel

A vessel engaged in fishing approaching a restricted vessel on **either** of its sides must give way (R-18).

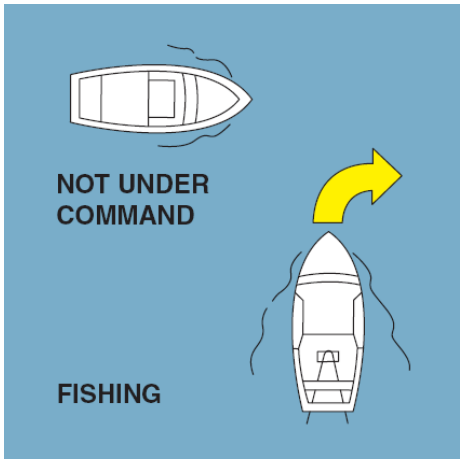


Figure 29: Vessel engaged in fishing and vessel not under command

A vessel engaged in fishing approaching a vessel not under command on **either** of its sides must give way (R-18).

8.8 Vessel navigation lights

Navigation lights and signals not only tell other vessels where you are, but what you are doing. Using these lights and signals properly is an important part of safe navigation.

NB: A vessel that is «"underway" is a vessel that is not anchored, made fast to shore, or aground.

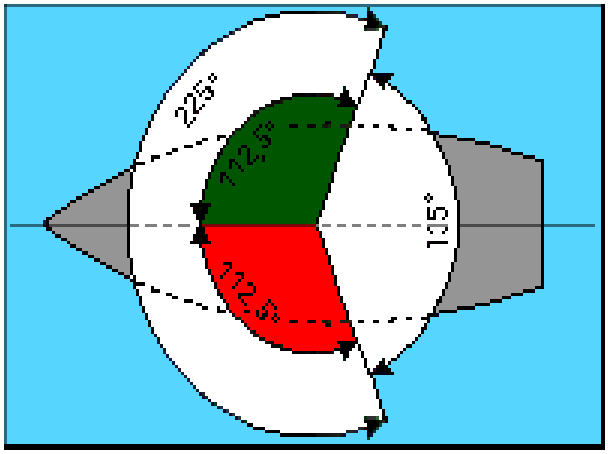


Figure 30: The different lights on a vessel that is "underway"

The different lights on a power-driven fishing vessel which is not engaged in fishing when underway.

(Instead of the lights shown above, fishing vessels of less than 12 metres in length may show a white light that is visible over the entire horizon, as well as side lights).

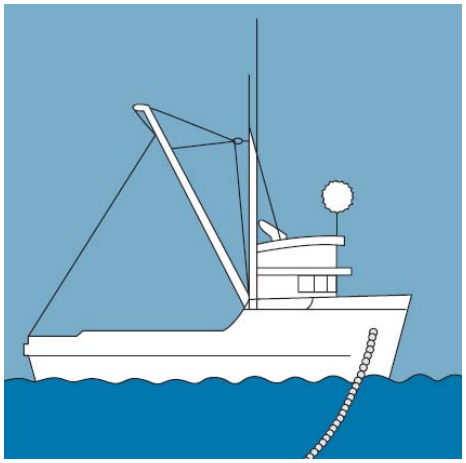


Figure 31: Vessel at anchor.

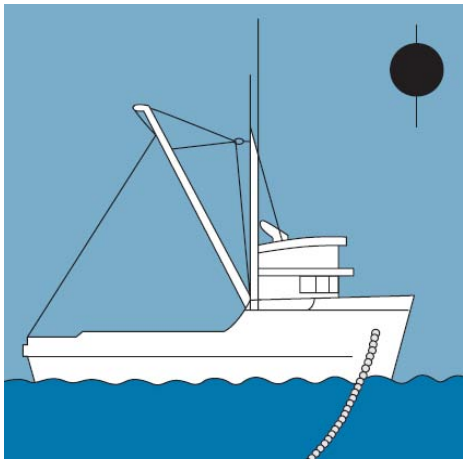


Figure 32: Day signal

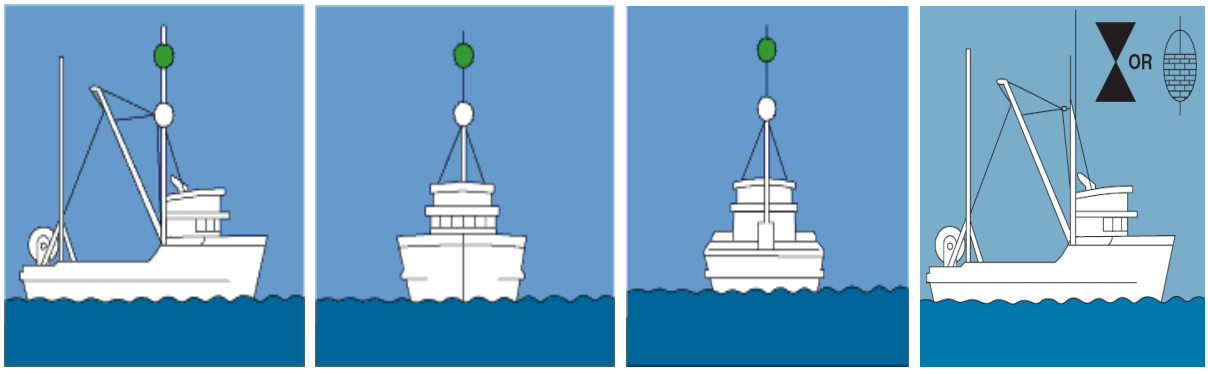


Figure 33: Vessel engaged in trawling, underway, but not making way through water.

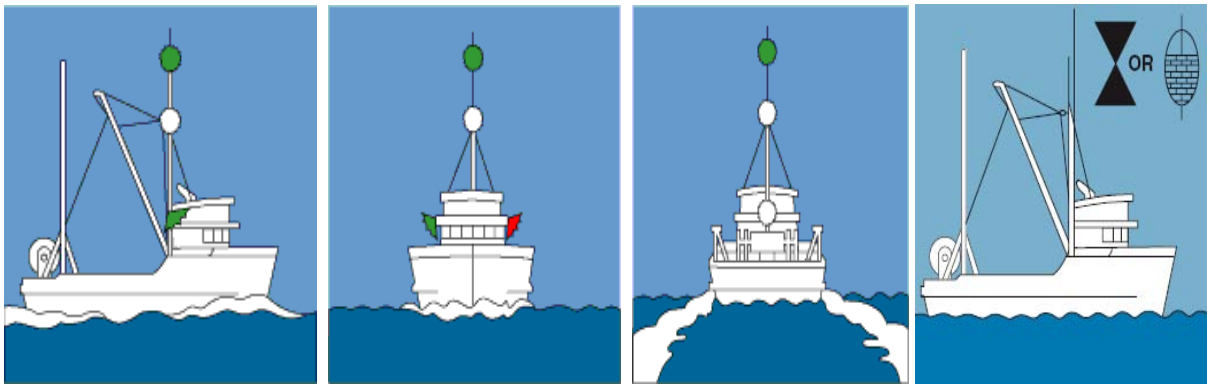


Figure 34: Vessel engaged in trawling, underway and making way through water

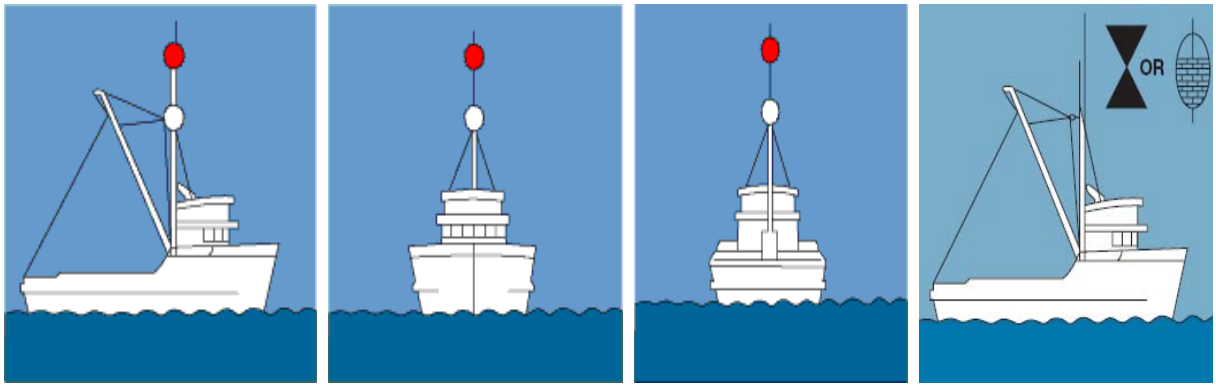


Figure 35: Vessel engaged in fishing other than trawling, underway, but not making way through water, with gear extending no more than 150 metre horizontally.

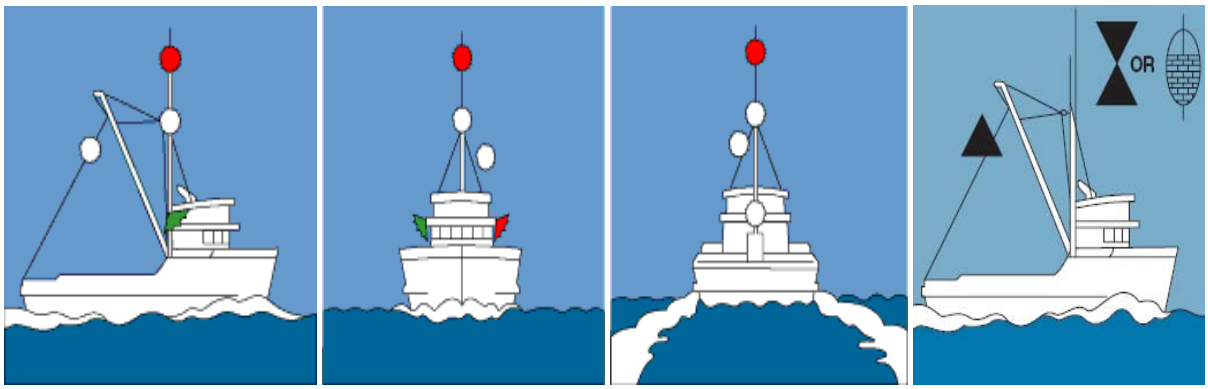


Figure 36: Fishing gear extending more than 150 metres horizontally.

8.9 BUOYAGE

The aim of buoyage is to draw the navigator's attention to the edges of the channel and to the dangers which he may not be able to see because they are covered by the sea.

The buoyage system recommended by the International Association of Lighthouse Authorities (IALA) divides the world into two regions, A and B. Africa is in Region A and America in Region B. The only difference lies in their use of colour.

8.9.1 Types of marks

The buoyage system comprises five types of marks, any combination of which may be used.

1. **The lateral marks** indicate the port and starboard sides of the route to be followed. This is the case in a channel where the vessel has to pass between buoys or beacons on the port and starboard sides. These may be of different shapes and colours, and may be found in an estuary or river, etc.

The marks may be placed on either side. Lateral buoyage operates in the **conventional direction**: this is the direction a vessel coming from the high seas follows as it approaches a port, a river, an estuary or another fairway.

As a vessel enters a port, the starboard marks will be those on the right-hand side and the port marks will be those on the left-hand side, as we face the front of the vessel. In Region A, the port marks are red in colour and cylindrical in shape. The starboard marks are green in colour and conical in shape.

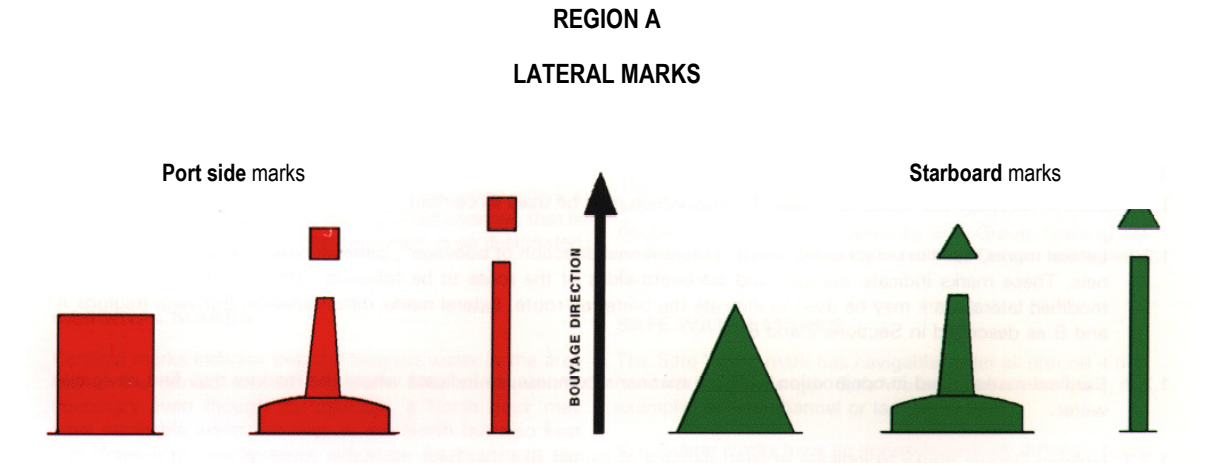


Figure 37: Region A port and starboard lateral marks

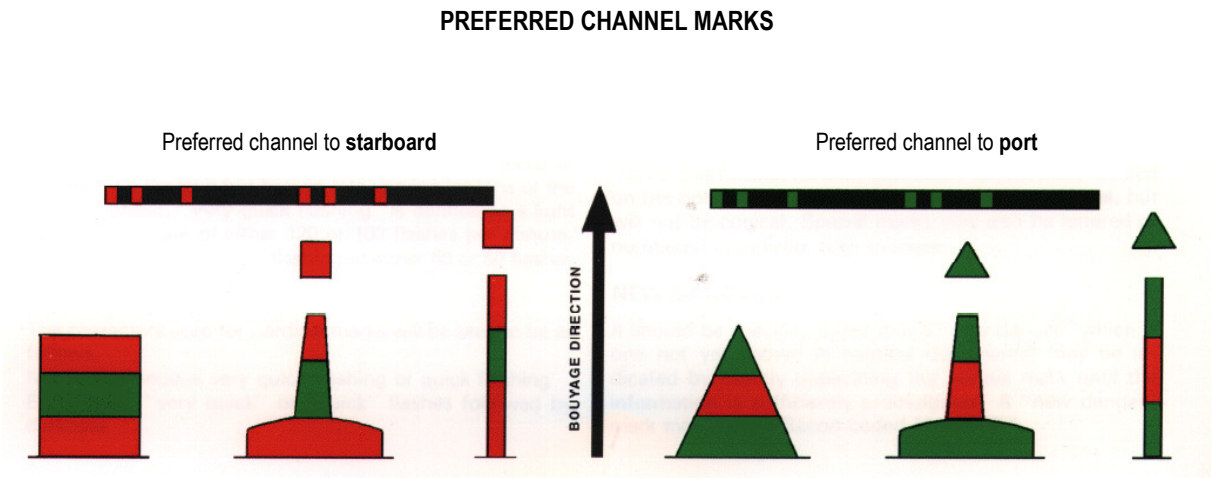


Figure 38: Port and starboard preferred channel marks.

2. **Cardinal marks** indicate the area where a vessel can find safe water to avoid danger. They are used in conjunction with the vessel's compass. The cardinal marks indicate one of the four main cardinal directions starting from the danger point using colours and lights placed at appropriate locations.

a) Cardinal north mark

The upper part of the cardinal **north** marker buoy is black and the lower part is yellow. The safe waters are to be found north of this buoy.

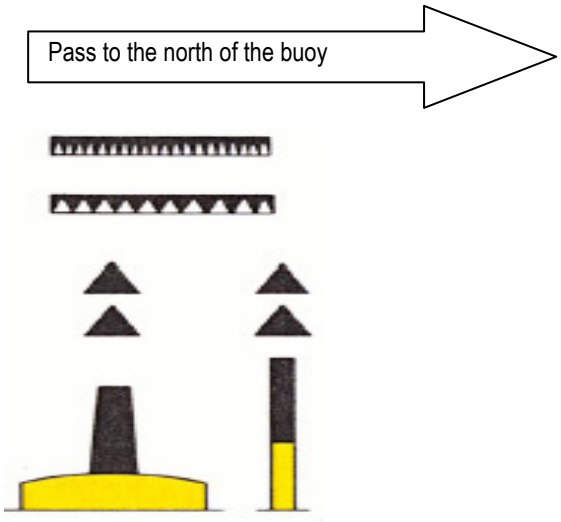


Figure 39: Cardinal **north** mark and corresponding warning lights

b) Cardinal south mark

The upper part of the cardinal **south** marker buoy is yellow and the lower part is black. The safe waters are to be found south of this buoy.

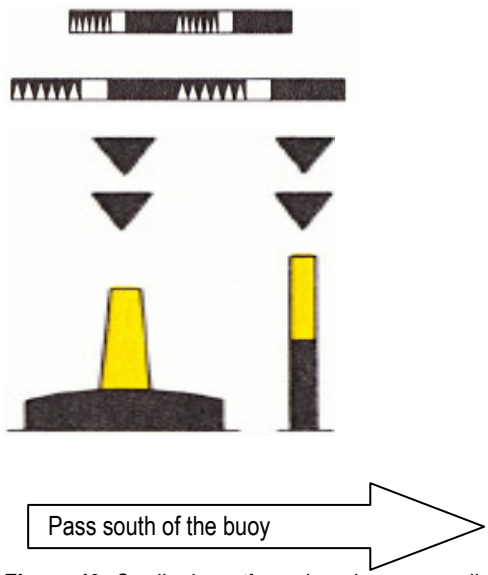


Figure 40: Cardinal **south** mark and corresponding warning lights

c) Cardinal east mark

The cardinal **east** marker buoy is black with a yellow band. The safe waters are to be found east of this buoy.

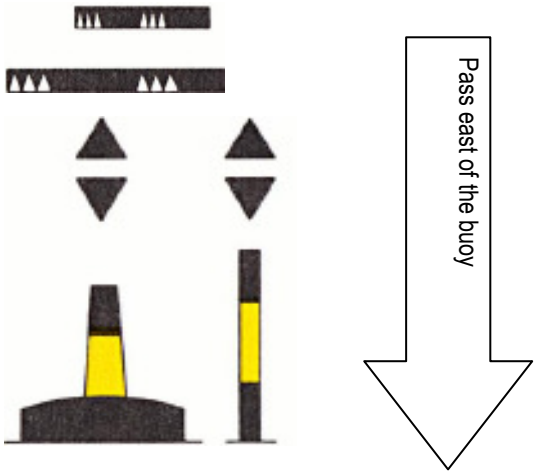


Figure 41: Cardinal **east** mark and corresponding warning lights.

d) Cardinale west mark

The cardinal **west** marker buoy is yellow with a black band. The safe waters are to be found west of this buoy.

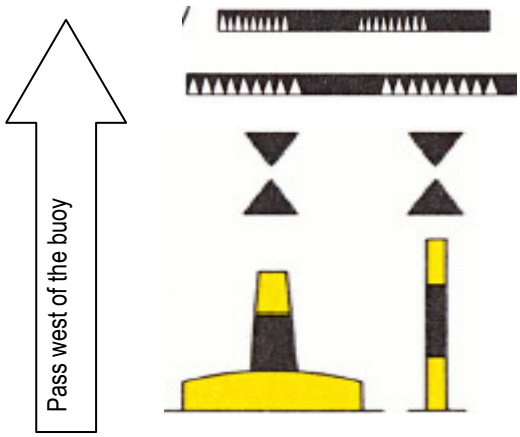


Figure 42: Cardinal **west** mark and corresponding warning lights

3. **The isolated danger mark** signals the isolated dangers in a restricted area around which the waters are safe. These buoys are also found in areas fairly close to the coast. Vessels may go around them from either side, but should give them a wide berth.

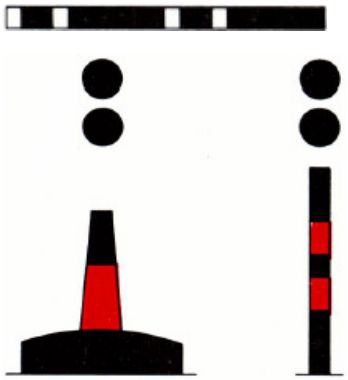


Figure 43: Isolated danger mark and corresponding warning lights

4. **Safe water marks :** These show that the waters around them are safe (the area around them will be clear of any obstacle posing a danger to navigation).

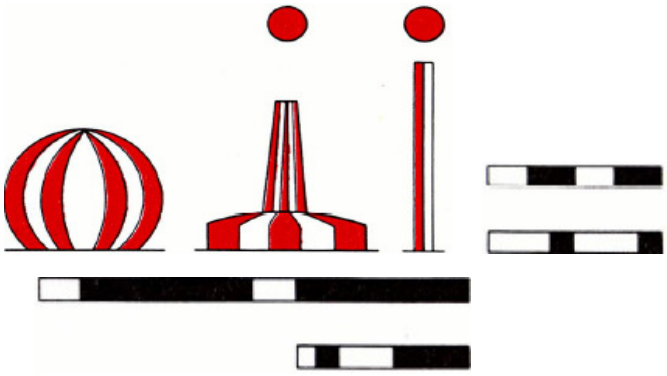


Figure 44: Safe water marks and corresponding warning ilghts

5. **Special marks** showing an area or configuration mentioned in nautical documents. These marks are not designed to help navigation. They signal the existence of prohibited or reserved areas and various obstacles of which navigators must be made aware. They are usually found in the immediate proximity of the coast.

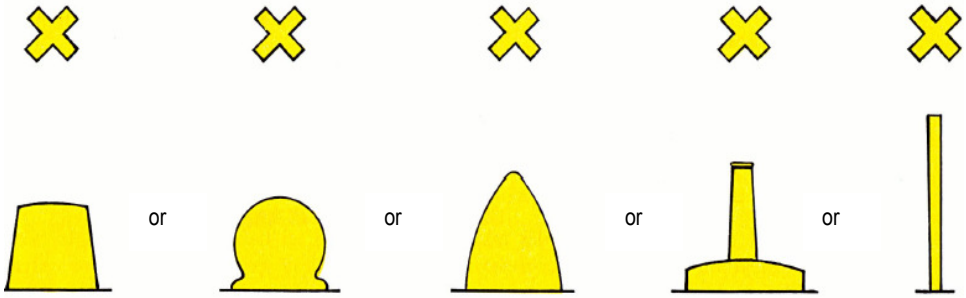


Figure 45: Special marks

Example of buoyage in a coastal area (Region A)

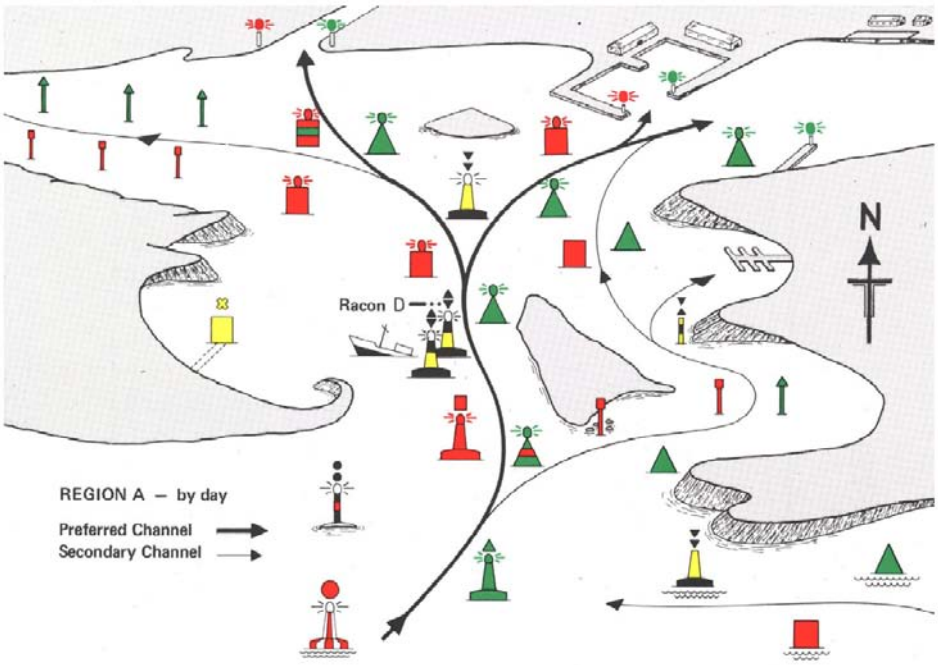


Figure 46: Buoyage in a coastal area.

8.10 Tides

Tides are the vertical movement of water. This movement is caused by the pull of gravity by the moon and the sun. Because of its proximity, the moon is mainly responsible for the tides.

The moon turns around the earth and, as it passes, generates movement of the water at that point. At the same time, because of the earth's rotation and the centrifugal force this causes, the same phenomenon occurs on the other side of the planet (Figure 47).

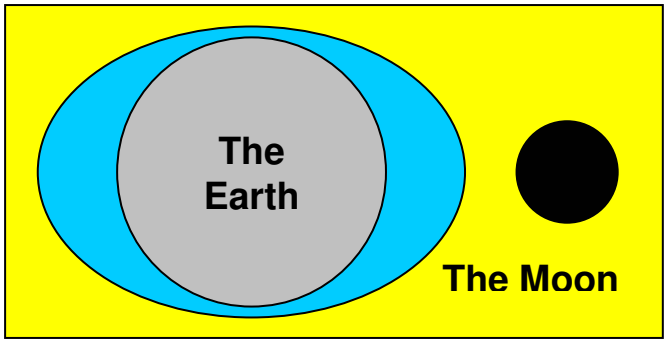


Figure 47: Position of the earth, the moon, and the tide

Our sub-region has a semi-diurnal tidal regime, which means that we experience 2 high tides and 2 low tides every 24 hours – 24 hours and 50 minutes to be precise – so that the slack is subject to a time-lag of roughly one hour every day.

Since the earth rotates on its own axis, in 24 hours Dakar will experience the following : with the moon on Dakar's side of the earth it will be high tide, then 6 hours later on the side where the pull of gravity is least, it will be low tide.

Again, about 6 hours later on the opposite side of the earth to the moon, the tide will again be high.

And, finally, about 6 hours after, on the side where the pull of gravity is least, the tide will again be low.

Tides are a factor that every navigator should understand if he wishes to use them to his advantage and ensure that he is not caught out.

Spring tides occur at full moon and new moon times, while neap tides occur at the first and last quarters.

8.10.1 Tidal currents

Coastal currents vary from time to time in force and direction during the course of the day, due mainly to tidal influence. Currents are caused by the movements of sea water particles. These are characterized by their horizontal speed and their direction, measured between 0° and 360° and in the direction in which the current is running.

8.10.2 Winds

The coastal wind phenomenon is associated with the movement of masses of hot air. Hot air expands, becomes lighter and tends to rise.

Since the sea temperature during the day rises more slowly than the land temperature, the air on land rises, resulting in the sea air moving in toward the land. This is called the thermal breeze.

The opposite occurs during the night, when the sea loses its heat more slowly than the land.

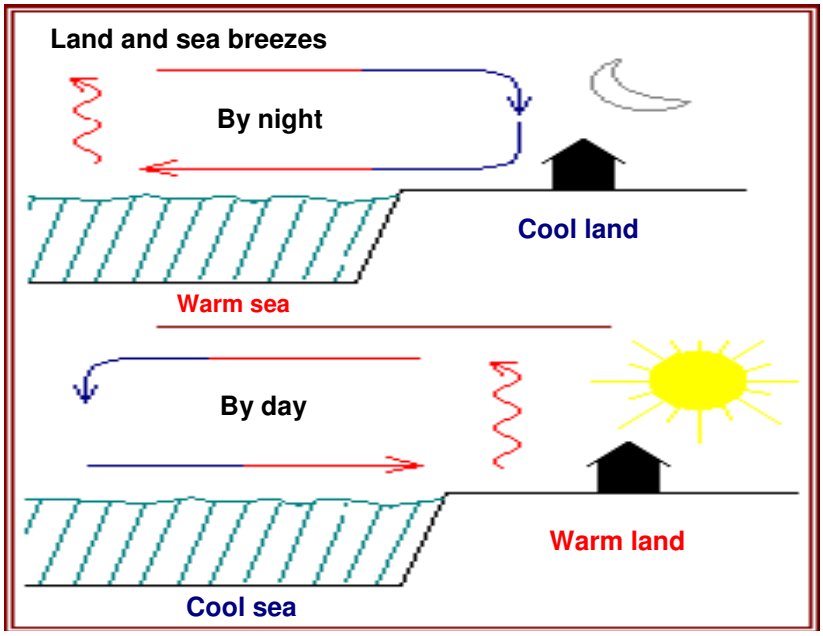


Figure 48: Movement of air masses and heating

9 METEOROLOGY

Meteorology is a very important factor where safety, fishing activities and the biology of marine animals are concerned.

9.1 Weather forecasts

Maritime weather forecasts may be obtained by :

- Consulting the official meteorological services;
- Consulting the media ;
- Listening to coastal radio stations;
- Consulting the port's weather warning system.

Maritime weather bulletins comprise four types of warnings of dangerous conditions:

- Small craft warnings (winds of 20 to 33 knots – wave heights 2 to 3 metres);
- Gale warnings (winds of 34 to 47 knots – wave heights 6 to 9 metres);
- Storm warnings (winds of 48 to 63 knots – wave heights 9 to 16 metres);
- Hurricane warnings (winds of 64 knots and over – wave heights of over 16 metres.

A certain number of signs may herald deteriorating weather conditions and should prompt seafarers to quickly seek shelter. These are :

- A rapid drop in barometric pressure;
- A change in wind direction;
- Deteriorating visibility;
- The appearance or the passage of certain clouds.

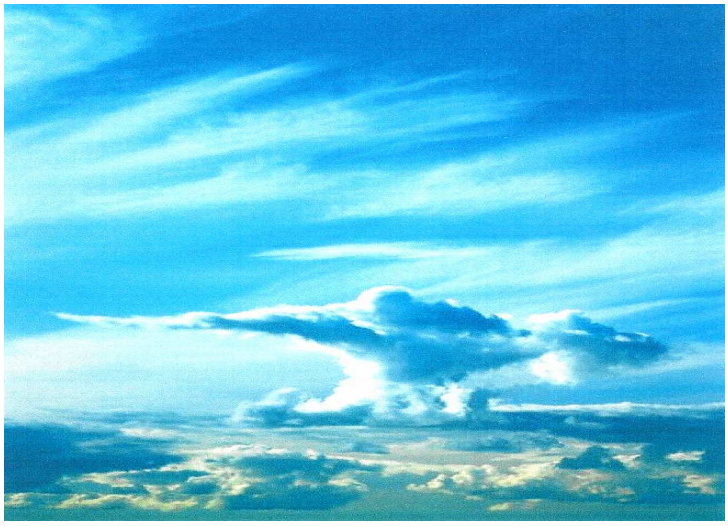


Figure 49: Cumulo-nimbus.

Cumulo-nimbus: large isolated clouds extending vertically, with a flat, anvil-like top, occurring at medium altitude.

Severe weather conditions: storms, showers, hail and lightning. Centre of strong, vertical currents, winds of 15 to 30 m/s.

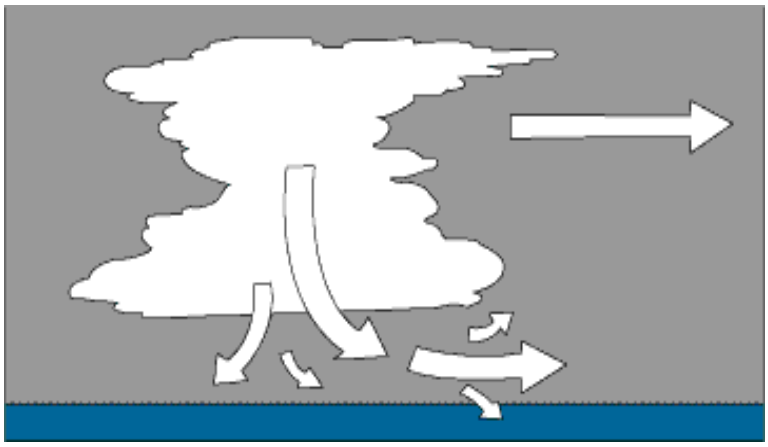


Figure 50: Direction of a storm at sea.

- storms: the heaviest rain occurs directly under the thundercloud, reducing visibility. Heavy rain lasts from 5 to 15 minutes. Thunderstorms usually last less than an hour.

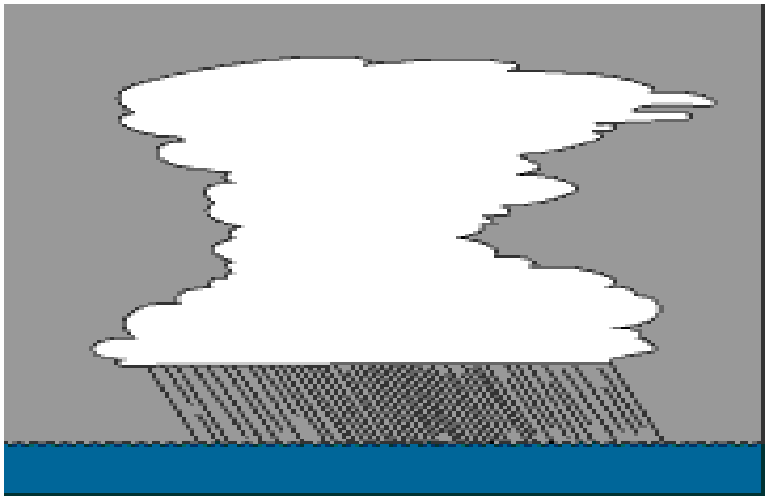


Figure 51: Storm at sea.

The heaviest rain occurs directly under the storm cloud, reducing visibility. Heavy rain lasts between 5 and 15 minutes. Thunderstorms usually last less than an hour.

The rain falls under a thunderstorm cloud.

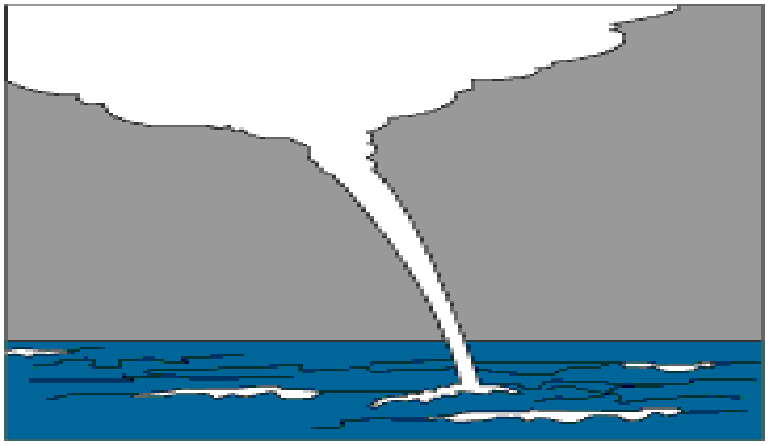


Figure 52: Funnel-shaped waterspout at sea

- **waterspouts:** a waterspout is a funnel-shaped column of water reaching from the base of the thunderstorm cloud to the water, and may suck up water into the air. It usually lasts less than 15 minutes

- fog: fog is a common problem at sea. The main danger here is reduced visibility.

- tides: tides may be accompanied by strong currents ; the danger stems from the loss of depth.

NB: It is useful to understand the Beaufort/Douglas scale and the conversion tables, wave height (metres- feet), barometric pressure (millibars, kilo pascals, inches).

The best way to prevent a vessel from capsizing is to ensure it is well-designed, well-maintained and correctly loaded, and to have an experienced captain and crew.

These factors can be controlled. A well-designed vessel will not capsize, even under very bad conditions, if it is correctly manoeuvred.

Anticipating the conditions which make the vessel unstable and being able to recognize the warning signs of these conditions can save lives. You should be constantly alert to any loss of stability. A fishing vessel's stability is a very complex subject.

9.2 The state of the sea

The state of the sea is very changeable during the course of the day. Pay particular attention to the following situations :

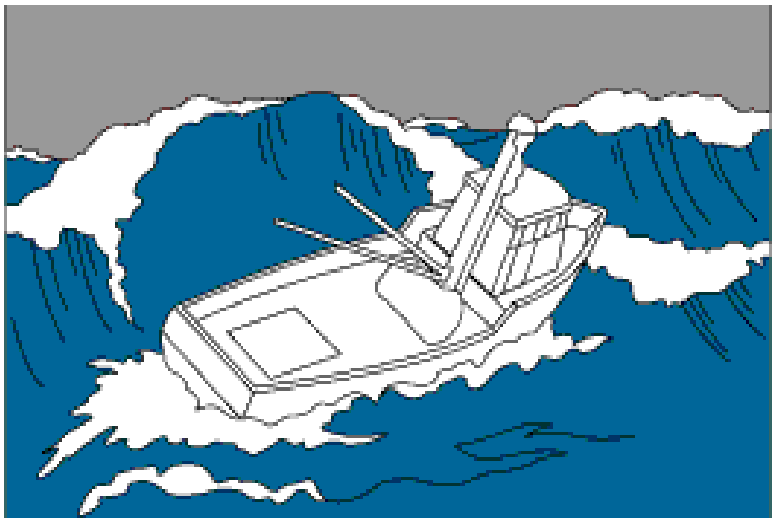


Figure 53: Vessel in a beam sea

- beam-sea: in a beam sea, excessive roll can create a dangerous list. This could cause the vessel to capsize. Strong breaking waves could also cause the vessel to capsize.

ATTENTION: make sure that the vessel is not beam to the wind when it is immobile.

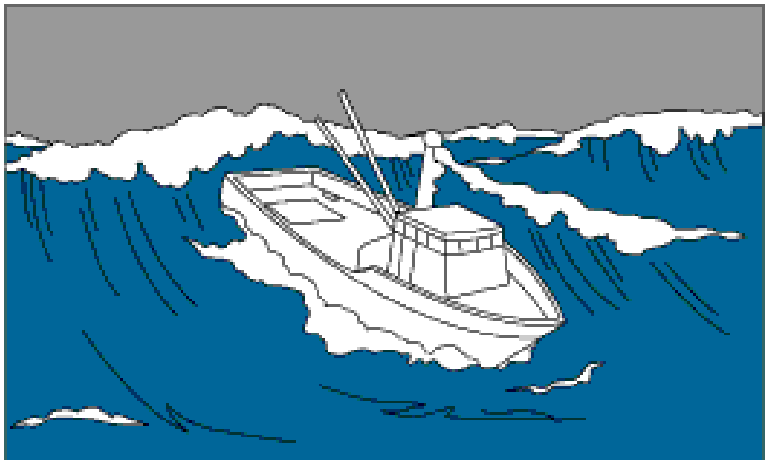


Figure 54: Vessel in a following sea

- in a following sea: in a following sea, a vessel may lose stability on a wave crest. If the vessel is overtaken by a wave crest, broaching may occur.

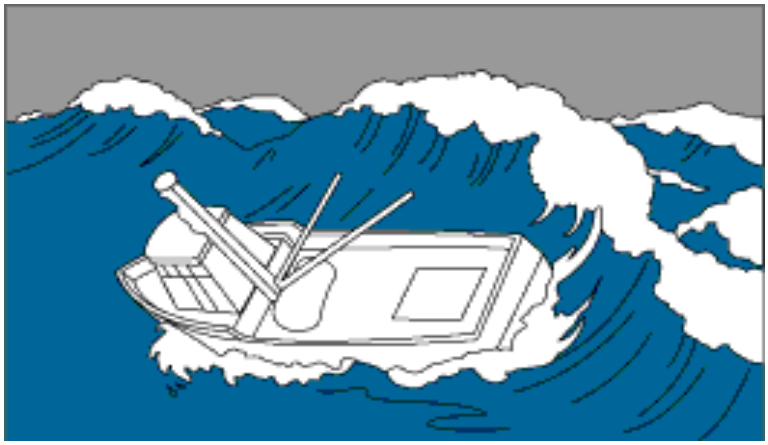


Figure 55: Vessel in a quartering sea

10 VESSEL STABILITY

Stability: This refers to a vessel's ability to remain upright in the water and to return to its initial position after momentarily listing.

Of all the types of accidents, sinking and capsizing caused by stability loss are the most likely to result in the loss of human lives at sea. Many of these accidents could have been avoided, had the operators taken the necessary precautions and heeded the warnings.

A well-designed vessel will not sink or capsize even in the worst conditions if it is properly operated. To reduce the risk of these accidents, keep the following rules in mind:

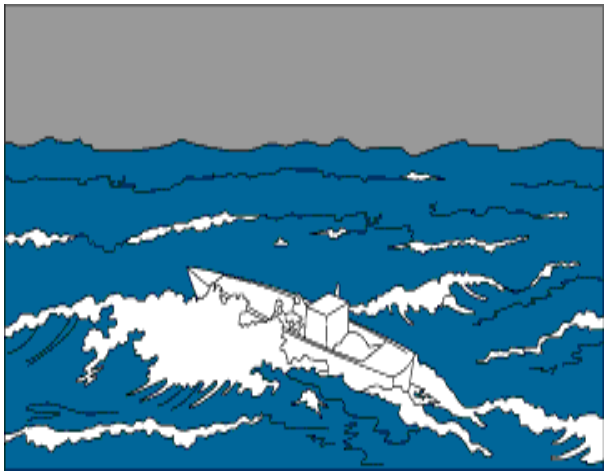


Figure 56: Heavy swell

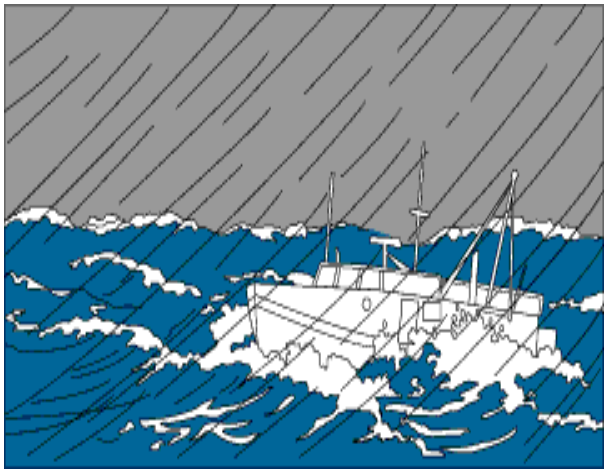


Figure 57: Strong wind and rain

a. Be aware of external forces – wind, waves and water depth. Always check weather forecasts before departure. Avoid going out in rough weather.

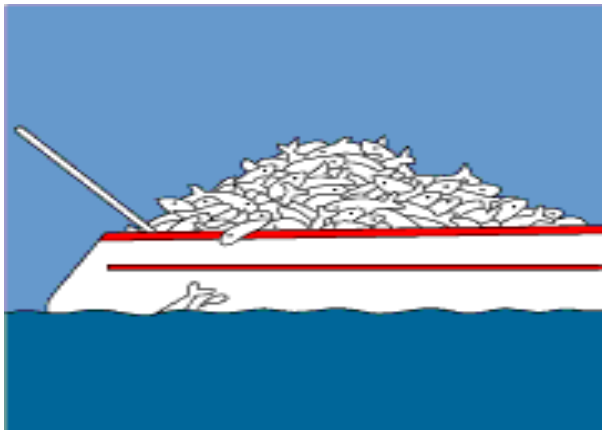


Figure 58 : Overloaded vessel

b. Do not overload your vessel. Be aware of the extra weight added and available free-board. Ensure that passengers and cargo are evenly distributed.

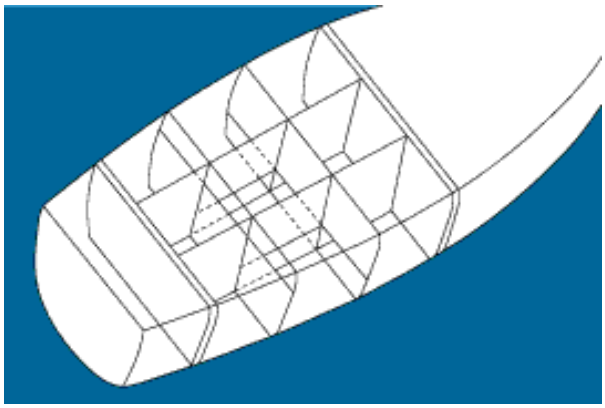


Figure 59: Compartmentalization of hold

c. Ensure that all the cargo is correctly stowed away and remains so during the voyage. If possible, place the cargo under the deck.

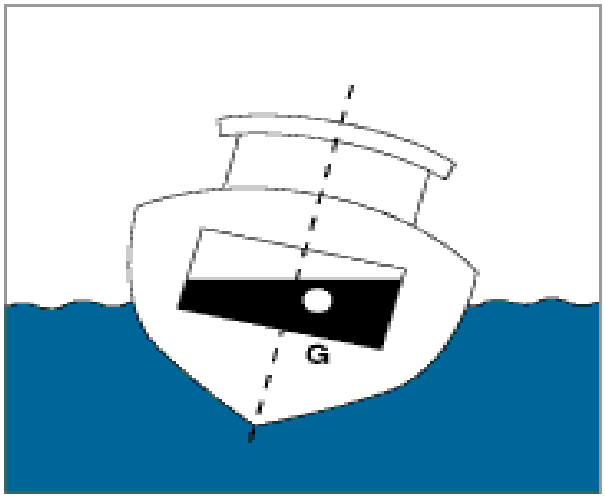


Figure 60: Heeling when liquid is in a single compartment

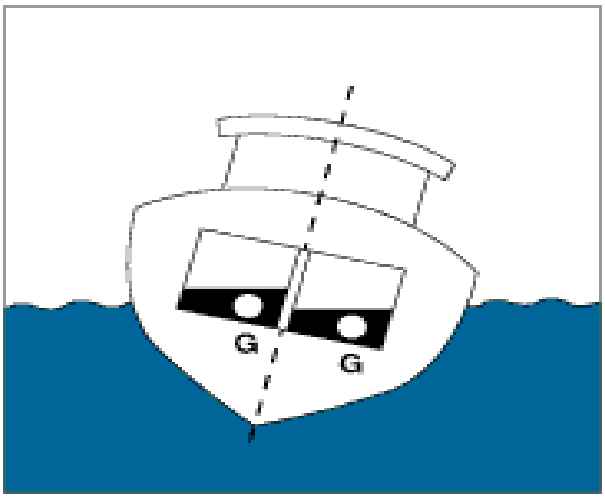


Figure 61: Heeling when liquids are in separate compartments

d. Partly-full water ballasts and reserve fuel tanks cause instability. The liquids must be contained in such a way as not to affect the stability of the vessel.

e. As far as possible, adjust your course or speed or both, so as to reduce the vessel's movements, especially rolling.

f. Avoid tight or high-speed turns when there is a risk of stability loss.

10.1 Position of the centre of gravity depending on load

Placing weight above the centre of gravity

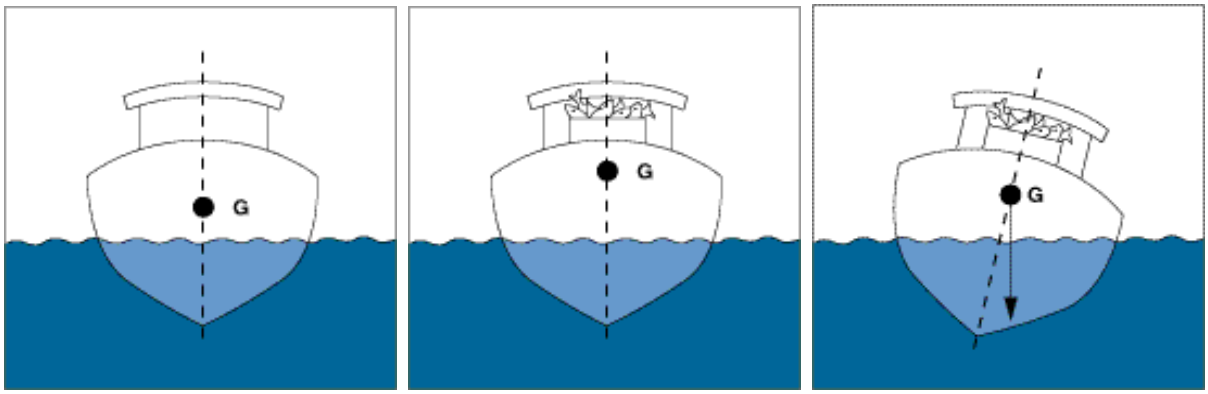


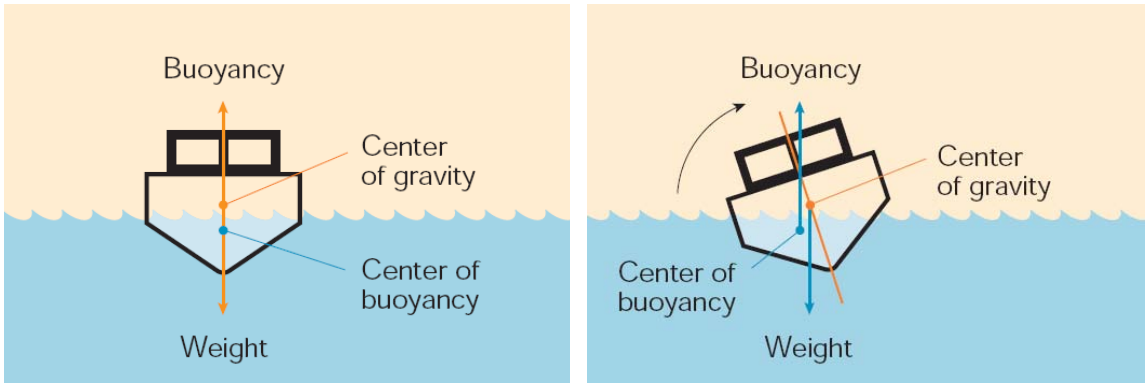
Figure 62: Position of centre of gravity and load

10.2 Factors affecting stability

Many factors affect the stability of a vessel in the water and each type of vessel reacts differently to the forces which cause it to list.

Operators need to be aware of how the design and loading of their vessel interact with natural external forces and affect the vessel's stability.

A vessel that has been suitably designed and loaded should resist the forces which cause it to list when it is operated within its environmental limits.



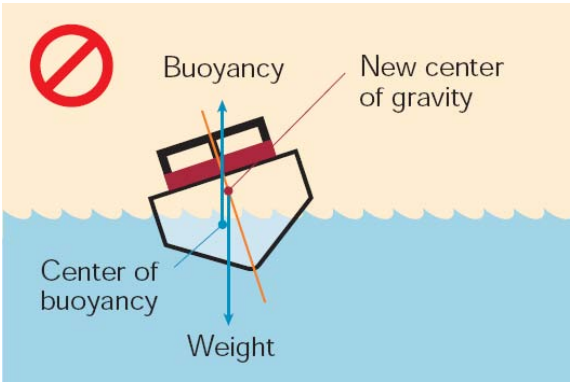
In a stable position, the downward force of gravity is equal to the upward force of floatability.

Floatability and gravity straighten up the vessel

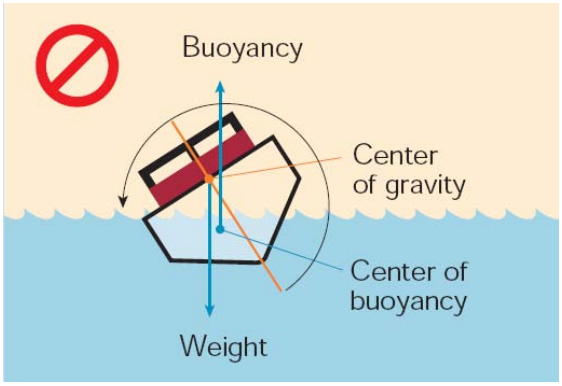
Figure 63: Floatability and the forces of listing

Adding weight above a vessel's centre of gravity changes its stability. When the centre of gravity is too high, the vessel becomes unstable.

And, consequently, a smaller degree of listing is enough to cause it to capsize. Removing weight from under the centre of gravity also reduces stability.



If a weight is added above the centre of gravity, the vessel's capacity to right itself is reduced.



Floatability and gravity cause a vessel to capsize.

Figure 64: Floatability and listing forces.

The most important factors preventing a vessel from capsizing are good design, regular maintenance, correct loading and an experienced captain and crew.

However, these factors can be controlled. A well-designed vessel, if it is properly operated, will not capsize, even in the worst possible conditions.

The ability to anticipate the conditions which destabilize a vessel and to recognize the warning signs of these conditions may save lives. You should always be alert to any loss of stability. The stability of a fishing vessel is a very complex subject.

11 BASIC KNOWLEDGE OF SEARCH AND RESCUE

The term search and rescue sums up a series of coordinated actions - from the receipt of the information to the implementation of search measures and rescue techniques for protecting lives at sea. In cases of distress, fishermen must know how to send emergency messages, such as Mayday and SOS.

11.1 Search and rescue of shipwrecked persons

Search and rescue operations are carried out by well-trained teams with adequate resources using standardized procedures. When a vessel is reported missing in the SRFC countries, the fishermen organize themselves informally to take part in search and rescue operations, even before the rescue units arrive at the scene. This does not mean that the alert should not be sent to the competent services.

NB: Assistance to persons in danger is a legal requirement provided free of charge

Figure 65: A light search and rescue vessel

Distress calls may be sent automatically or manually using a VHF radio fitted with an NSC (number-based selective call) component. These calls may be intercepted by ships or land-based stations which will trigger the search and rescue operations.

Emergency Position Indicating Radio Beacons (EPIRBs), also known as distress beacons, transmit a signal which is picked up by a monitoring device enabling the vessels, aircraft and persons in distress to be detected and located. These are radio beacons with a COSPAS SARSAT interface allowing the distress signal to be relayed via an international satellite belonging to the search and rescue system. (Not yet in use in small-scale fisheries in West Africa).

11.2 First aid

Basic principle: never panic and keep calm.

The crew need to have a basic knowledge of first aid :

- In the event of an accident, never move an injured person before immobilizing his/her fractures and stemming bleeding, except if the person's life is in danger in the place where he/she is found;
- First aid treatments may be dangerous ; never carry them out unless they are really necessary;
- Never give an unconscious person or a person in danger of fainting anything to drink or eat, as this could cause suffocation;
- If the injured person is conscious and in pain, give him/her an analgesic (do not exceed the prescribed dose);
- In the event of an accident, take note of the time and circumstances of the accident, the state of the person when found and the measures you have taken.

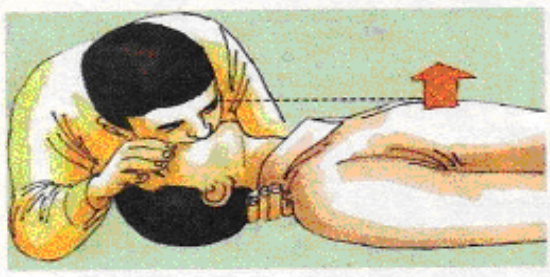
NB: In cases of hypothermia cover, but do not rub, the person.

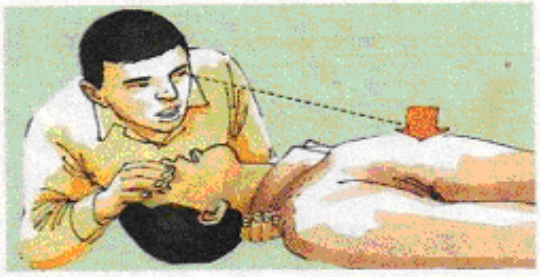
Make for the nearest coast, If the injured person is unconscious, do not move him/her. If the person is wounded, apply a bandage.

Unconscious persons must be laid on their sides in the recovery position to ensure that their upper airways remain open and to facilitate the evacuation of liquids in the event of vomiting or bleeding.

Some examples of first aid

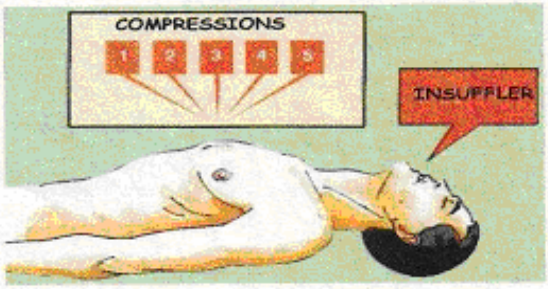
- **Mouth-to-mouth resuscitation**





- **External cardiac massage**

Artificial respiration and external cardiac massage performed simultaneously by two persons



Ratio of insufflations to thoracic compressions in cardio-respiratory resuscitation performed by two persons

Recovery Position for Unconscious Persons

Unconscious person

Left hand on stomach. Right knee raised

Bring arm alongside body

Turn patient on to right-hand side

Place left hand under cheek

Figure 66: Examples of first aid

11.3 Recommendations regarding crews' working conditions, hygiene and health

The captain and his crew must be physically fit and in good health.

The captain must have the required qualifications for steering and operating a small-scale vessel.

The captain must be at least 20 years of age.

The captain and the vessel owner must be bound by a contract and a licence must be issued by the area's fishery authority.

ILO's minimum recommended age for work at sea is 16 years. Restrictions are possible depending on candidates' learning ability.

Persons working with purse seines and ''pirogues glacières'' (pirogues equipped with ice boxes made of expanded polystyrene) must be sufficient in number and suitably qualified to ensure good safety and working practices.

The vessel owner must allow the crew rest periods. ILO recommends 10 hours per 24 hour period and 77 hours per seven day period.

A list of all crew members must always be abailable on land and on the vessel.

Adequate accomodation, and sufficient quantities of food and drinking water must be provided for the crews on ''pirogues glacières''. Vessels must be inspected by the Fishery and Surveillance Services and a clearance certificate issued prior to departure.

Fishermen embarking on long-range pirogues must provide proof of being in good physical health.

The captain must have basic knowledge of first aid. First aid can make the difference between life and death. Fishermen should be encouraged to take a first aid course.

12 MONITORING, CONTROL AND SURVEILLANCE

Monitoring, control and surveillance play an essential role in fishery resource management and in the improvement of safety in small-scale fisheries.

12.1 Rules and methods of control

Control is the operation of verifying and establishing that fishing operations, documents, equipment and products comply with the regulations in force.

12.1.1 Control of the vessel

Vessel control must include inspection of the following:

- The fishing grounds;
- The safety equipment;
- The fishing permit;
- Certificates of Seaworthiness;
- Vessel registration certificate;
- Fishing gear.

Figure 67: Small-scale fishing vessel at sea

12.1.2 Catch inspection and control

- Compliance between fishing gear and the catches on board the vessel;
- Compliance of sizes and weights with the regulations;
- Presence of juveniles on board, etc.

12.1.3 Practical use of inspection equipment

- Practical work on the GPS (bearings, positioning);
- Practical work on sea charts (reading, positioning);
- Practical work with rulers, calipers and ichthyometres (measurements).

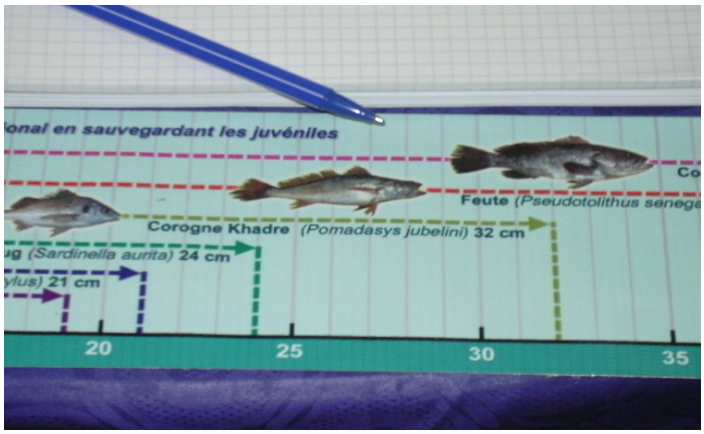


Figure 68: Ruler to measure length of fish

13 COLLECTING DATA ON THE SAFETY OF SMALL-SCALE FISHERIES

Data collection is essential for taking decisions on the safety of small-scale fishing vessels at sea. A number of measures could be taken. Accurate analysis of accident data could identify priorities for each area of operation and each target group.

- Dividing up the area of operation (affinity criteria);
- Introducing data collection sheets (model annex 2);
- Training decision-makers and raising players' awareness;
- Compiling and analyzing the data (on a monthly, three-monthly, six-monthly or annual basis).

Exercise

The table below sums up the data on the types of accidents occurring in small-scale fisheries in a country in Region **A.**

Make an annual global analysis and a three-monthly analysis. What solutions do you suggest for reducing accidents? Identify your priorities.

MONTH	TYPES OF ACCIDENT						TOTAL/ MONTH	LIVES LOST	MATERIAL DAMAGE
	CAPSIZING	COLLISION	FIRE ON BOARD BORD	LEAKS	MAN OVERBOARD À	MISSING			
JANUARY	1	10	1	1	1	10		6	
FÉBRUARY	1	18	0	0	0	17		3	
MARCH	2	20	1	0	1	13		2	
APRIL	17	0	1	0	0	11		9	
MAY	12	2	0	0	0	19		10	
JUNE	19	1	0	0	0	20		13	
JULY	0	1	14	0	0	15		1	
AUGUST	0	4	16	0	0	13		6	
SEPTEMBER	1	2	18	0	0	14		0	
OCTOBER	1	2	0	0	0	17		1	
NOVEMBER	1	1	0	0	0	20		1	
DÉCEMBER	2	1	0	0	0	10		1	
TOTAL/YEAR									

Good collection and analysis of data on accidents and incidents at sea promote the understanding of fishermen's safety problems and the provision of effective solutions.

14 SPECIFIC PROBLEMS

Each country has its own small-scale fishery problems. Fishing vessels and fishing techniques vary widely, even though the ultimate aim is to catch fish. New phenomena are beginning to appear : piracy and illegal migratory flows.

What are the specific problems encountered by small-scale fishermen?

Exercise

Draw up a list of the various types of small-scale fisheries and classify them by crew, level of autonomy and level of safety.

14.1 Unlawful acts and attacks at sea

Unlawful acts have been reported in some countries, especially in border areas. This phenomenon is related to the armed conflict carried out by organized gangs in certain localities. Fishermen report that they have been robbed and their vessels, engines, food and cargo taken. The 1988 Convention for the Suppression of Unlawful Acts (SUA) and its protocol condemn this type of acts of piracy. Their aim is to ensure that appropriate action is taken against those committing unlawful acts against vessels. In the present Convention, such acts are listed mainly as:

- The taking-over of a vessel by force;
- The committing of acts of violence against persons on board;
- The placing of devices intended to destroy or damage the vessel.

14.2 Mysticism and safety

In the countries concerned, mysticism is deeply entrenched in fishermen's traditions. They show some reluctance to use modern safety equipment, sometimes due to a lack of information and clear explanations about the equipment.

14.3 solidarity and mutual aid in fishing communities

Given the difficulties caused by the fact that resources are scarce and fuel costs high, the sense of solidarity and mutual aid, formerly very strong among the fishing communities, is tending to disappear.

14.4 unreported and unregulated ILLEGAL fishing

This is quite common in some countries and poses serious safety problems for small-scale fishing vessels. Collisions and loss of equipment are regularly reported.

15 SIMULATION EXERCISES

Simulation exercises are held during trips at sea to test the knowledge acquired in the training courses. The following topics may be practised at sea with experts' assistance.

Figure 69: Use of a distress flare.

Comment: the flare must be held with the arm out-stretched in the direction of the wind to prevent the smoke from blowing into the user's face.

Figure 70: Use of a hand-held flare.

Comment: the flare must be held away from the body, with arms stretched skywards.

15.1 Capsizing

A vessel may suddenly capsize in bad weather, as a result of a false manoeuvre and/or incorrect loading.

Exercise: Righting a capsized pirogue.

Figure 71: Capsized pirogue.

15.2 Man overboard

A fisherman may fall overboard as a result of an incorrect manoeuvre or inattention due to tiredness. This type of accident could be fatal given that it often occurs at night and in bad weather. Searches are often fruitless, especially if the victim was not wearing a life jacket.

Exercise: Recovery of a man overboard

15.3 Injuries at sea

Different types of injuries may occur at sea, such as those caused by venomous or dangerous fish, cutting objects, falls due to loss of balance, etc.

Exercise: Evacuating an injured man to the beach

Figure 72: Evacuation of an injured man

Comment: the injured person must be held horizontally, against the bodies of those carrying him. His head should be kept still.

11.4 Drownings

Drownings are frequent. It is not unusual to find small-scale fishermen who cannot swim.

Exercise: Artificial respiration

Figure 73: First aid to a drowning person

APPENDIX 1. INTERNATIONAL AND NATIONAL RULES AND REGULATIONS ON SAFETY IN THE FISHERIES SECTOR

Small-scale fishing vessels vary in size depending on what they are used for, the type of fishing they are involved in and the zone in which they fish. It is to be noted that there is no adequate legal framework for artisanal fishing vessels.

Some regulations and a legal framework have been implemented to provide solutions to the safety failures up- and down-stream of the fisheries sector, but these have little or no relevance to small-scale fisheries.

INTERNATIONAL RULES AND REGULATIONS

Steps are underway to regulate safety at sea, but much remains to be done for small-scale fishing vessels in the developing countries.

FAO/ILO/IMO Voluntary Guidelines for the design, construction and equipment of small fishing vessels

The directives prepared in 1980 by FAO, ILO and IMO cover the design, construction and equipment of vessels of between 12 and 24 metres in length.

It is worth mentioning that FAO, ILO and IMO are currently preparing Safety recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels.

FAO/ILO/IMO Document for Guideance on Training and Certification of Fishing Vessel Personnel

Aim: to provide guidelines for the persons responsible for preparing and revising training courses for fishing vessel personnel.

Vessels covered: vessels of less than 24 metres in length or vessels equiped with engines of less than 750 kW.

International Convention on the Safety of Life at Sea (SOLAS)

This was the first international convention on safety at sea, prepared in 191,1 following the sinking of the Titanic, and adopted in 1914;

The SOLAS Convention prescribes the minimum standards of vessel construction, equipment and operation;

The SOLAS Convention does not apply to fishing vessels, primitively-constructed wooden vessels, or non-motorized boats;

Most of the fishing and transport vessels operated in the developing countries are not taken into account.;

Fishing vessels are explicitly excluded from some conventions;

Most of these conventions do not apply to vessels of less than 24 metres in length;

Covered vessels respresent little more than 1 per cent of the world's fishing fleet.

However, there is an international willingness to introduce a legal and technical framework aimed at taking concerted action to improve fishing vessel safety.

1995 International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW 95- F)

Aim: to set minimum training standards for the crews of fishing vessels of more than 24 metres in length, with engines of 750kW and over.

This convention has not yet entered into force.

Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977

This was the first international convention on fishing vessel safety.

The convention contains safety requirements for the construction and equipment of new, decked, sea-going fishing vessels of 24 metres in length and over, including those involved in processing their catches.

Existing vessels are covered in respect of radio and navigational equipment requirements as well as in respect of emergency procedures, musters and drills.

This convention has not yet entered into force.

1982 United Nations Convention on the Law of the Sea

This Convention defines the rights and obligations of coastal states.

All States are required to take the necessary measures to ensure the safety at sea of vessels flying their flag, especially with regard to:

- The construction, equipment and seaworthiness of such vessels;
- The membership, working conditions and training of crews, bearing in mind applicable international instruments, the use of signals, the need for good communications and the prevention of collisions.

Code of Conduct for Responsible Fisheries

The Code recognizes the importance of safety and covers on-board working and living conditions, crew's health, education and training, the construction and equipment of fishing vessels, search and rescue and the notification of accidents.

Advantage: It is flexible and voluntary.

IMO Code for Investigations into Accidents and Incidents at Sea

It recommends the introduction of an accident at sea investigation system as a means of establishing the circumstances and determining the causes of accidents and formulating appropriate safety recommendations.

1979 IMO International Convention on Maritime Search and Rescue

Coastal countries are required to set up an effective sea search and rescue system (SAR), with operating procedures and emergency response capabilities.

2007 ILO Recommendations concerning Work in the Fisheries Sector

The recommendations concern all sizes of commercial fishing vessels operating in water courses, lakes or channels, with the exception of vessels involved in subsistence and recreational fishing, and cover :

- The definition of the responsibility of fishing vessel owners and skippers;
- Minimum working conditions required on board fishing vessels;
- Crews' conditions of service and rest periods;
- Medical care, health protection and social considerations;
- Implementation of national regulatory policies on safety, which presupposes a number of provisions in several areas.

NATIONAL RULES AND REGULATIONS

Each of the countries concerned have introduced national rules and regulations to ensure the safety of persons and goods. Indeed, each country has a fisheries code regulating fishing activities. However, some deficiencies have been noted with respect to the following:

Wearing of life jackets: most countries do not have rules and regulations making the keeping and wearing of life jackets compulsory.

Other safety equipment: absence of regulations for small-scale fisheries.

Radio communications (VHF): absence of regulations for small-scale fisheries.

Vessel construction standards: absence of regulations for small-scale fisheries.

Captain and fishermen: absence of regulations (crews' training and role).

As well as the absence of national regulations governing the use of safety equipment, such equipment simply does not exist in many countries, in addition to which the work of small-scale fishermen is not considered a genuine occupation.

APPENDIX 2. REPORT OF EVENT AT SEA

N° : …….

Region: .....

Date and time of event: ……..Date and time of alert:……..

Place and position of event:…….

Origin of alert:.....

Identity of vessel/s invoved (1): ……. .....

Type of assistance requested: .....

Category (2): …… Flag: .....

Type of distress (3): .....

Persons on board vessel (4): .....

Weather conditions at the site (5): .....

Wind: ……. Force: …….. on Beaufort scale .....

Swell in the sector: ……. Height: ……. Metres: .....

Visibility: .....

Means of response used (6): .....

Result of response: .....

Persons saved (4): .....

Persons assisted (4): .....

Persons injured (4): .....

Persons missing (4): .....

State of vessel/s after the event (7): .....

Damage recorded: .....

Causes and circumstances of event: .....

Date and time rescue vessel left port: .....

Date and time rescue vessel docked: .....

Total duration of operation: .....

(1) Name and registration number
(2) Merchant, fishing (artisanal, coastal, high seas) or recreational vessel
(3) Sinking, aground, fire, collision, leaking, etc.
(4) Number
(5) Wind, sector, force, state of the sea, etc.
(6) Type and department to which they belong
(7) Recovered or lost

APPENDIX 3. PRECAUTIONS TO BE TAKEN PRIOR TO GOING TO SEA

Check the weather forecasts

You need to know how to obtain up-to-date and pertinent information prior to departure and throughout your trip, so that you can change your plans, if necessary,

Check if there are any local dangers or restrictions with regard to navigation

Are there any : rapids, dams, low-head dams, currents, tides, sudden winds, white water, aerial or under-sea cables, bridges or rapid cross-waves ? This information may be obtained from charts and/or by consulting local people.

Inspect the exterior of your vessel (hull and engine)

Are there any cracks in or other damage to the hull? Is the engine working well? Is the propeller intact?

Multi-purpose materials, such as paddles, sails, empty plastic, polystyrene or aluminium containers and empty iron pots, could be used on the vessel for added safety.

Use a check list suited to your vessel

Using the list of the minimum safety equipment required for your length of vessel, draw up a list to which you can add further equipment suited to the activity you are involved in, the duration of your trip and/or the environment. Below is an example of a check list which could be used for a motor vessel:

Check the weather forecast	[ ]
Inspect the vessel	[ ]
Check fuel, water and food reserves	[ ]
Prepare and deliver a route plan (fishing ground, list of crew)	[ ]
Check that vessel correctly loaded	[ ]
Show crew where life jackets and other equipment are stored	[ ]
Mandatory equipment	
Appropriate life jacket for each crew member	[ ]
Manual propulsion device and anchor	[ ]
Bailer or hand pump	[ ]
Sound warning device	[ ]
Navigation lights comply with regulations (on collisions)	[ ]
15 m floating hauling line	[ ]
Water-proof pocket torch or 3 flares	[ ]
AB fire extinguisher	[ ]
Other equipment:	
Chart and compass	[ ]
Engine repair kit and maintenance manual	[ ]

APPENDIX 4. THE SCIENCE OF HELPING ADULTS LEARN OR ANDRAGOGY

Andragogy is the science of how adults learn, whereas pedagogy involves teaching of children for the future.

N.B: Adults are more interested in the practical than the theoretical. In other words, they are interested in the immediate and direct application of knowledge.

The advantages of andragogy are:

- It allows for and encourages the active involvement of participants.
- It encourages the learner to use his/her own life experiences in the learning process in order to see the knowledge gained through new data or new problems.
- It makes for a much more cooperative learning environment (trainer/trained and not teacher/pupil).
- It involves a participatory approach, unlike pedagogy.
- Evaluation allows learners to review the knowledge gained with a view to establishing new learning activities where required.
- Activities are empirical and not ‘‘transmitted, consumed or banked for the future’’, unlike traditional pedagogy which is teaching for the future.
- As a method, andragogy recognizes the empirical learning cycle (learning by experience) as a training technique using the seven steps below :

1) A favourable learning environment (breaking the ice – ice breaker).
2) Review of learning objectives.
3) Delivery of training course content.
4) Course assimilation process.
5) Learning and lessons drawn from the assimilation process.
6) Application in the field.
7) Evaluation of knowledge acquired and follow-up.

N.B:

1. The first step is to create a favourable learning environment. This is referred to as ‘‘breaking the ice”, often with a joke or little story. Be careful : this joke which is to help break the ice (favourable environment – stage 1 of the cycle) must not frustrate or target any of the participants and must not be too long (maximum 1 minute). The ‘‘ice breaker’’ must relate to the course or training session.
2. <u>The objectives</u>: These are the objectives of the training course or seminar which are far more general than the aims of training sessions which are much more specific.

Whether the objectives be those of a general seminar or of specific seminar sessions, they must be measurable, attainable and short-term. In order to achieve this, it is recommended that active verbs be used. For example, the participants will understand by the end of the session.

There are three types of learning objectives:

a) Knowledge: where the participants will understand, but which does not necessarily mean that they will be able to put the knowledge into practice.
b) Skill: where the participants will be able to put the knowledge into practice, but this does not mecessarily imply a change in behaviour.
c) Behaviour: change in behaviour.

After breaking the ice (1 minute) and setting out the learning objectives (5 minutes), it will be time to advance to stage 3, i.e. delivering the course content. This is where the training officer delivers his lesson in the form of a short lecture of between 20 and 30 minutes in a session of 1 to 2 hours duration. The facilitator/training officer must also manage time, behaviour and discussions. With regard to the delivery of course content the following must be noted:

Plan of delivery:

(a) Subject matter to be covered in the lecture, the position and importance of the subject of the lecture (5 minutes);
(b) general content of the lecture, including general data and information about the subject (15-20 min.);
(c) lessons learned, both main and general (5 min.) and a general summary of the lecture (5 min.).

The learning process starts after the content of the lesson has been delivered. Here, the training officer encourages discussions, observations, questions, comments responses, etc., about the lesson that has just been delivered.
Stage 5 is the general learning stage, during which the participants review the given subject matter.This involves field work, putting what they have learned into practice through exercises, tasks (individual or group), role play and simulations.

N.B: the tasks must be clearly explained and the participants must understand what they are being asked to do before they begin them ; the training officer must supervise the participants throughout the duration of the tasks.

Application: Stage 6 is where the participants present and together discuss the task reports. It is at this stage that the participants draw the lessons applicable to their everyday working situations. Stage 7 is the participants' evaluation of the set learning objectives. Have they been achieved and how are they to be followed up?

Facilitation techniques: andragogy places great importance on the need to involve the participants in the learning process. This is where the importance of the role of the training officer as a facilitator in the learning process lies. This is why a training officer/facilitator must be:

- Less protective of his own opinions and convictions than other types of teachers.
- Capable of listening to the participants, especially when they express their feelings.
- Capable of accepting and pleasing the ''troublemakers'', promoters of new and creative ideas which emerge from among the participants.
- Aware of the tendency among training officers/facilitators to be much more attentive to the relationships they develop with the participants around the course content.
- Capable of accepting comments and suggestions (feedback), be these positive or negative, and using these constructively.

As required in the facilitation process, one should avoid a negative approach, show tolerance to the hasty remarks of others and never frustrate or distract the participants.

Facilitators should always go back over and clarify concepts, problems, questions, observations and comments before taking action on or reacting to them. They should also encourage several participants to express themselves on the same topic before drawing any conclusions.

Paraphrasing has been suggested as a good clarification technique. For instance: ''If I understand you correctly, ... you say that, … ''. The training officer could also summarize participants contributions.

Avoid responding or reacting directly to questions before putting them to the class and asking the participants to give their points of view (this is also a good time-management technique). Manage the troublemakers and agitators, bearing in mind that they, too, are entitled to air their opinions!

A training officer's tool-box should comprise lecture notes, a black or white board, a screen, teaching material, printed matter, note pads, tables, projectors, films, videos, question and answer kits, demonstration sessions, organized visits, diagrams, tasks and the participants' participation.

The preparation and design of lessons and training tools require long hours of hard work. It is estimated that an average training officer will work 6 to 10 hours preparing an average 60 to 90 minute lesson!

No more than three colours need be used on a single page. The ability to choose the right colours will make any audiovisual aid all the more effective. Choose the colours carefully (black, blue, red, green …) with your aim in mind. Example : on a white board :

- black for general information,
- red for emphasis and drawing attention,
- green for things that are easy to learn, etc.

After this lesson on andragogy, followed by questions and answers, the participants reform their initial groups to prepare, present and conduct lessons.

APPENDIX 5. T-NAT

TRAINING NEEDS ASSESSMENT TOOL

Name : _____ **Date:** _____ **Agency:** _____

Aim: The aim of the training evaluation tool is to help us to identify our training needs. The process involves a series of sequential stages allowing us to compare those for which we have the know-how (LEVEL OF SKILL) with those for which we need to acquire the know-how (NEEDS AT WORK).

PROCESS: the stages:

Part I: **Draw up a list of knowledge/skill possessed.**

Part II: **Rank your current skill levels and the levels required for your work.**

Part III: **Fill in the form (tool).**

Part IV: **Interpret the tool.**

Part V: **Prepare training programme.**

I. Knowledge/skills

I.

List of knowledge/skills

II. Assess skill level

	Rank current skill level	**Rank skill level needed at work**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Knowledge/skill level assessment scale

Use this scale to assess knowledge/skill levels:

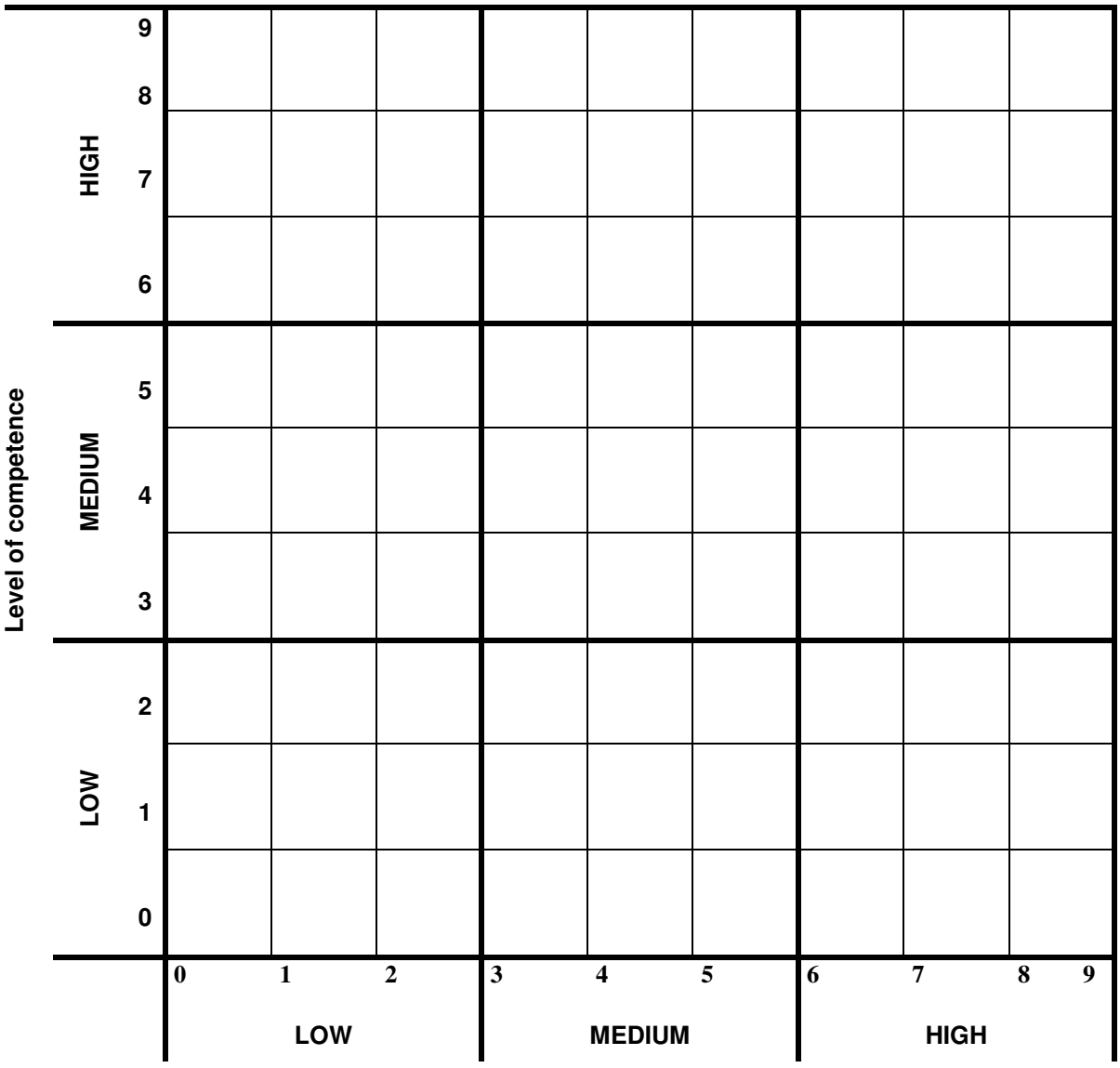
LOW LEVEL	MEDIUM LEVEL	HIGH LEVEL
Seen by the others as inexperienced in this area. Needs fairly constant supervision and help and is sometimes displeased with himself. Work often revised or sent back by the supervisor.	Seen as sufficiently competent in this area. Becoming increasingly independent in the practical side of the subject. Feels more confident. Work rarely revised or sent back.	Considered competent, capable of training other participants. Does not require supervision; completely at ease. Work usually accepted without any changes.

Work needs assessment scale. Assess work needs for each item of knowledge or skill.

LOW LEVEL	MEDIUM LEVEL	HIGH LEVEL
Where knowledge/skill is rarely used (needed) at work, is not part of the work routine or is not very important.	Where knowledge/skill is used at work from time to time and/or visibly enhances performance; fairly important, but not essential.	Where the knowledge/skill is frequently used at and is an integral part of the participant's work and is very visible and important.

PUT YOUR SCORES INTO THIS GRID.

Training Needs Assessment Tool



Explanation:

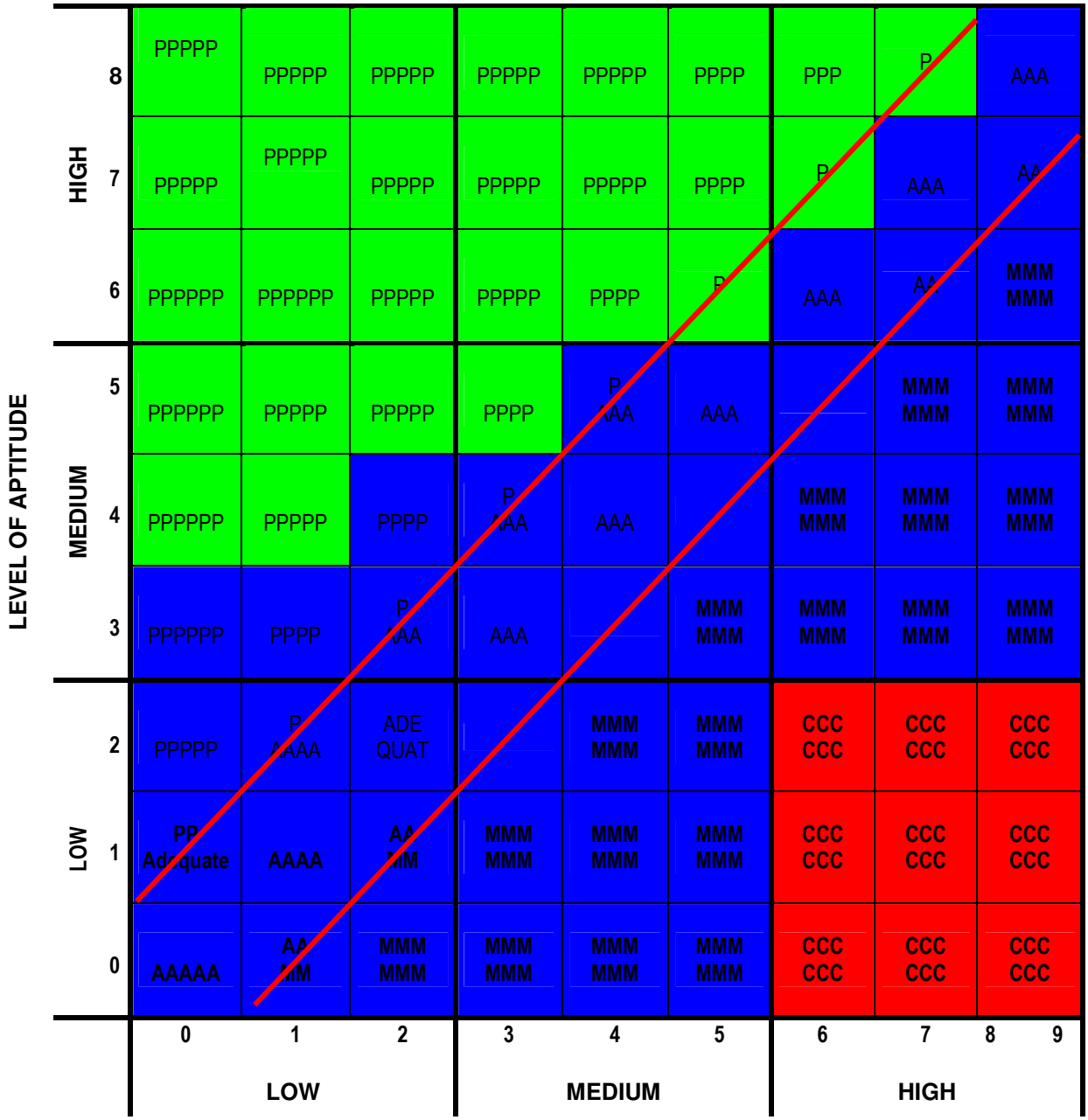
Lo **TRAINING NEEDS CRITICAL AREA ZZONE DES BESOINS CRITIQUES EN FORMATION:CCCCCCCCCCCCCCCCCCCCOZONE DES BESOINS CRITIQUES EN**

Lo **AREA OF MEDIUM TRAINING NEEDS :MMMMMMMMMMMMMMMMMMMM**

AREA OF ADEQUATE KNOWLEDGE

When work needs are not greater than level of aptitude: PPPPPP

AREA OF EXPERT LEVEL OF KNOWLEDGE : PPPPPPPPP



LEVEL OF NEED AT WORK

APPENDIX 6. PREPARATION TEAM

FAO

Per DANIELSSON	FAO Rome
Mamanding KUYATEH	FAO Banjul

SRFC

Mamadou BALL	SRFC

SENEGAL

Mamadou FAYE	Direction de la protection et de la surveillance des pêches
Babacar FAYE	École nationale de formation maritime
Abdou MBODJ	Direction de la protection et de la surveillance des pêches
Mamadou NDIAYE	Direction de la protection et de la surveillance des pêches

MAURITANIA

Babana Ould YAHYA	École nationale d'enseignement maritime et des pêches

APPENDIX 7. LIST OF LOCAL TRAINING OFFICERS AND FOCAL POINTS

LOCAL TRAINING OFFICERS:

Senegal		
Mamadou	NDIAYE	DPSP
Mamadou Abibou	DIAGNE	DPSP
The Gambia		
Baboucar	DIATTA	Banjul Fisherman
Amadou	TOURAY	Burfut Fisherman
Sierra Leone		
Félix O	CHARLEY	Ministère de la pêche et de la marine
Francis	KOROMA	Police maritime
Denis Sombo	LANSANA	Direction de la météorologie
Siméon	NDALOMA	Forces armées de la marine
Guinea Bissau		
Inocencio Antonio Gomes	LOPES	Centre de formation des pêches
Guinea Conakry		
Mouhamed	CAMARA	ASECMAR
Yves Tato	COLY	Marine nationale

FOCAL POINTS

Senegal		
CV Dame	MBOUP	DPSP
The Gambia		
Amadou	SENE	Ministère de la pêche
Sierra Leone		
Sheik Ibrahim	DEEN	Ministère de la pêche
Guinea Bissau		
Malang	MANE	Ministère des pêches
Guinea Conakry		
Joachim Yaya	TOURE	Ministère de la pêche
Mauritania		
Mamadou Boubou	LO	Ministère de la Pêche

APPENDIX 8. PAPERS AND MATERIALS PRODUCED BY THE PROJECT

- Country statistical reports
- Teaching material (see Appendix 5-1)
- Training officer training manuals

APPENDIX 9. TRAINING KIT

Equipment needed for the training courses.

- Life jackets
- GPS
- Radar reflector
- Binoculars
- Magnetic compass
- Hand-held llghts
- Distress flares
- Orange smoke flare
- 100 metres of rope
- Floater
- First-aid kit
- Signal lamp
- Flash lamp
- Fire extinguisher

APPENDIX 10. BIBLIOGRAPHY

Anonyme, 1998. Loi 98-32 du 14 avril 1998 portant code de la pêche maritime. Sénégal, 31pages.

Anonyme, 2002. Loi n° 2002-22 du 16 août 2002 portant code de la Marine marchande au Sénégal, 105 pages.

Anonyme, 1998. Décret 98-498 du 10 juin 1998 fixant les modalités d'application de la loi portant code de la pêche maritime. Sénégal, 29 pages.

Anonyme, 1995. Loi n° 009-95 du 31 janvier 1995 portant code de la Marine marchande. Mauritanie.

Anonyme, 2007. Ordonnance n° 022-2007 du 09 avril 2007 modifiant et complétant certaines dispositions de la loi n° 025-2000 du 24 janvier 2000 portant code des pêches. Mauritanie.

Anonyme, 2007. Arrêté 2954 du 03 décembre 2007 relatif à l'immatriculation des navires de pêche artisanale. Mauritanie, 3 pages.

Anonymous, 1998. Canadian Code of Conduct for Responsible Fishing Operations, 24 pages.

Anonyme, 1992. Séminaire sur la sécurité en mer des artisans-pêcheurs, Direction de la protection et de la surveillance des pêches au Sénégal, 139 pages.

Anonyme, 1954. Manuel de secourisme, croix rouge française, 304 pages.

ENEMP, 2008. Manuel de cours de formation de formateurs en sécurité en mer et co-surveillance des pêches en Mauritanie, 75 pages.

CRODT/ISRA, 2006. Recensement national de la pêche artisanale maritime sénégalaise, 141pages.

FAO, Fisheries technical paper n° 338, 1996. Monitoring, Control and Surveillance Systems for Capture Fisheries, 208 pages.

FAO, 1995. Code of Conduct for Responsible Fisheries. Rome.

FAO, 2001. Training Manual on Sustainable Fisheries Livelihoods, project GCP/INT/735/UK, 120 pages.

FAO, 2000. Extracts from directives and conventions on safety at sea, 7 pages.

Faye Babacar, 2007. Cours de navigation et sécurité en mer. École nationale de formation maritime, Dakar - Sénégal.

Faye Mamadou et al., 2007. Manuel de formation des commissions de visite technique des pirogues, PNI, 200 pages.

Faye Mamadou Faye et al., 2005. Manuel sur les bonnes pratiques de pêche et d'aquaculture, DCEG - année 2005, 35 pages.

MBODJ Abdou, 2007. Manuel d'application du GPS à la cartographie numérique, 14 pages.

SHOM, 1987. Signalisation maritime n° 3C, 55 pages.

SHOM, 1993. Règlement international pour prévenir les abordages en mer n° 2B, 46 pages.

SHOM, 1993. Règlement international pour prévenir les abordages en mer n° 2A, 32 pages.

Training officer guidance sheet **N°01**	1 Before
THE CURRENT SAFETY SITUATION IN SMALL-SCALE FISHERIES	2 At sea
	3 After

Module Content:

The aims of the module are to ensure that training officers :

- Have an idea of the current status of safety at sea in SRFC countries;
- Are aware of the laws introduced and resources available;
- Share experiences and initiatives – both successes and failures;
- Share information on improvements in safety for small-scale fishermen;
- Review all the problems and difficulties encountered;
- Be aware of the safety equipment required and its availability in each country;
- Are able to define the roles of the main players and their level of involvement.

Duration: 1 day

3.3.2 Availability of safety equipment

3.3.3 Engine safety

3.3.4 Crew safety

3.3.5 Participatory surveillance

3.3.6 Search and rescue

3.3.7 Health and HIV/Aids

3.4 GUINEA BISSAU

3.4.1 Monitoring vessel safety

3.4.2 Availability of safety equipment

3.4.3 Engine safety

3.4.4 Crew safety

3.4.5 Participatory surveillance

3.4.6 Search and rescue

3.4.7 Health and HIV/Aids

3.5 GUINEA

3.5.1 Monitoring vessel safety

3.5.2 Availability of safety equipment

3.5.3 Engine safety

3.5.4 Crew safety

3.5.5 Participatory surveillance

3.5.6 Search and rescue

3.5.7 Health and HIV/Aids

3.6 MAURITANIA

3.6.1 Monitoring vessel safety

3.6.2 Availability of safety equipment

3.6.3 Engine safety

3.6.4 Crew safety

3.6.5 Participatory surveillance

3.6.6 Search and rescue

3.6.7 Health and HIV/Aids

Training material	Other supports
• Training manual	
• Available rules and regulations	
• Photographs	
• Videos	
• Players' anecdotal evidence	

Training officer guidance sheet **N°02**	1 Before
FISHERIES MANAGEMENT	2 At sea
	3 After

Module content:

The aims of the module are to ensure that training officers :

- Are aware of the importance of small-scale fisheries;
- Understand what is meant by responsible fisheries;
- Are able to convey the concept of responsible fisheries to fishermen;
- Are able to prepare guides for responsible fishery practices with the help of the fishermen.

Duration: 2 days

4 FISHERIES MANAGEMENT

- 4.1 What is meant by responsible fisheries?
- 4.2 Fisheries development and management
- 4.3 Role of the authorities and the professional fishermen
- 4.4 Code of conduct and its application
- 4.5 Objectives of the code of conduct
- 4.6 Nature and scope of the code of conduct
- 4.7 Implementation, monitoring and up-dating of the code
- 4.8 Special needs of developing countries
- 4.9 Biology and environment
- 4.10 Environment and resource protection
- 4.11 Biodiversity and biodiversity conservation
  - 4.11.1 Biodiversity
  - 4.11.2 Biodiversity conservation

Training material	Other supports
• Training manual	
• Videos	
• FAO/CCRF(selections)	
• Sharing of views between participants	

Training officer guidance sheet **N°03**	1 Before
RULES AND REGULATIONS ON SAFETY AT SEA	2 At sea
	3 After

Module content:

The aims of the module are to ensure that training officers :

- Familiarize themselves with international safety rules and regulations;
- Have knowledge of existing rules and regulations;
- Share views on national rules and regulations.

Duration: 1 day

5 REGULATING SAFETY AT SEA

5.1 International rules and regulations

5.1.1 FAO/ILO/IMO Voluntary Guidelines for the design, construction and equipment of small fishing vessels for the design, construction and equipment of small fishing vessels

5.1.2 FAO/ILO/IMO Document for Guideance on Training and Certification of Fishing Vessel Personnel

5.1.3 International Convention on the Safety of Life at Sea (SOLAS)

5.1.4 1995 International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW 95- F)

5.1.5 Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977

5.1.6 1982 United Nations Convention on the Law of the Sea

5.1.7 Code of Conduct for Responsible Fisheries

5.1.8 IMO Code for Investigations into accidents and incidents at sea

5.1.9 1979 IMO International Convention on Maritime Search and Rescue

5.1.10 2007 ILO Recommendations concerning work in the fisheries sector

5.2 National rules and regulations

Training material	Other supports
• Training manual	• Various SRFC country papers
• Videos	• Safety recommendations
• STCW-F	
• Existing rules and regulations	

Training officer guidance sheet **N°04**	1 Before
PARTICIPATORY SURVEILLANCE	2 At sea
	3 After

Module content :

The aims of the module are to ensure that training officers :

- Are aware of the importance of surveillance at sea;
- Understand the concepts of co- or participatory surveillance;
- Are able to explain the concept of co-surveillance to the fishermen;
- Are able to of respond to events at sea, keep an inspection sheet and complete an offence report;
- Have knowledge of co-surveillance rules and regulations, where they exist.

Duration : 2 days

Training material	Other supports
• Training manual	• Fully-equiped pirogue
• Videos	• VHF radios
• Inspection sheet	• Map
• Offence report	• GPS, binoculars
• Example of an inspection report	• Safety kit
• Rules and regulations	• Badges
• Group participation	

Training officer guidance sheet **N°05** **SAFETY IN SMALL-SCALE FISHERIES: VESSELS**	1 Before 2 At sea 3 After

Module content:

Aims of the module are to ensure that training officers:

- Are aware of the dangers arising from accidents at sea;
- Understand vessel classification and uses;
- Are aware of small-scale fishing vessels' level of safety;
- Are able to advise fishermen on the choice of boat-building materials;
- Know how to conduct themselves in the event of a vessel capsizing;
- Are aware of the problems of pirogue stability;
- Have knowledge of and are able to administer first aid.

Duration: 1 day

7 SAFETY IN SMALL-SCALE FISHERIES: VESSELS, EQUIPMENT, ENGINES

7.1 Vessel safety

Training material	Other supports
• Training manual	• Players' anecdotal evidence
• Videos	• Group participation
• Classification of pirogues and jobs in small-scale fisheries	
• Different design models of pirogues to compare stability	

Training officer guidance sheet **N° 06** **SAFETY IN SMALL-SCALE FISHERIES: EQUIPMENT**	1 Before 2 At sea 3 After

Module content:

Aims of the module are to ensure that training officers:

- Are aware of the dangers arising from accidents at sea;
- Know the various types of small-scale fisheries' safety equipment;
- Are able to advise fishermen on the choice of safety equipment;
- Know how to conduct themselves in the event of an accident;
- Are able to use safety equipment;
- Have knowledge of and are able to administer first aid.

Duration: 2 days

7 SAFETY IN SMALL-SCALE FISHERIES; VESSELS, EQUIPMENT AND ENGINES

7.2 Safety equipment

Training material	Other supports
• Training manual	• Anecdotal evidence provided by the fishermen
• Videos	• Group participation and demonstration
• Safety at sea kit for artisanal fisheries	

Training officer guidance sheet N°07 **SAFETY IN SMALL-SCALE FISHERIES: ENGINES**	1 Before 2 At sea 3 After

Module content:

The aims of the module are to ensure that training officers:

- Are aware of the dangers arising from accidents at sea;
- Know the different types of engines in small-scale fisheries;
- Are able to advise the fishermen on the choice and maintenance of outboard motors;
- Know what attitude to adopt in the event of an engine fire or a breakdown;
- Are able to identify engine component parts;
- Have knowledge of and are able to administer first aid.

Duration: 1 day

7 SAFETY IN SMALL-SCALE FISHERIES : VESSELS, EQUIPMENT, ENGINES

7.3 Engine safety

7.3.1 Fuel/oil mixture

7.3.2 Checking the fuel system

7.3.3 Draining and replacing gear oil

7.3.4 Cleaning the filter

7.3.5 Replacing an anode

7.3.6 Start up, running and stopping

7.4 Fire prevention

7.4.1 The fire triangle

7.4.2 Different types of fire

7.4.3 Different types of fire extinguishers

Training material	Other supports
• Training manual	• Participation of an outboard motor mechanic
• Videos	• Group participation and demonstration
• Anecdotal evidence from fishers	
• Outboard motor user manual	

Training officer guidance sheet **N°08**	1 Before
SMALL-SCALE FISHING OPERATIONS	2 At sea
	3 After

Module content:

The aims of the module are to ensure that training officers:

- Are aware of the importance of human responsibility in safety at sea;
- Know the terminology used in maritime navigation;
- Know the various manoeuvres at sea;
- Are able to share with the fishermen the rules of sailing small-scale vessels and acquired knowledge;
- Are able to use signals and the various navigation aids (charts, etc.) ;
- Are able to recognize and interpret the various lights and marks on vessels.

Duration: 1 day

8 SMALL-SCALE FISHING OPERATIONS

- 8.1 Using charts (practical work)
- 8.2 Navigation by dead-reckoning
- 8.3 Finding one's bearings using the stars
- 8.4 True course and actual course
- 8.5 The magnetic compass (exercise: description, use)
- 8.6 GPS
- 8.7 Rules of steering and sailing
  - 8.7.1 General
  - 8.7.2 Narrow channels and fairways
  - 8.7.3 Restricted visibility
  - 8.7.4 Order of priority
  - 8.7.5 Most common scenarios
- 8.8 Vessel navigation lights
- 8.9 Buoyage
  - 8.9.1 Types of marks
- 8.10 Tides
  - 8.10.1 Tidal currents
  - 8.10.2 Winds

Training material	Other supports
• Training manual	• Binoculars
• Various tools in safety kit	• Signal lights
• Videos	• FM radio
• Trips out to sea	• Mobile phone
• Magnetic compass	• (VHF radio)
• GPS	
• Ruler	
• Group participation	
• Radar reflector	

Training officer guidance sheet **N°09**	1 Before
NAVIGATION	2 At sea
	3 After

Module content:

Aims of the module are to ensure that training officers:

- Know the essential navigation equipment;
- Know how to use navigation instruments;
- Know the signals;
- Are able to use a GPS;
- Are able to sail from one point to another.

Duration: 1 day

8 SMALL-SCALE FISHING OPERATIONS

- 8.1 Use of charts (practical work)
- 8.2 Navigation by dead reckoning
- 8.3 Finding one's bearings using the stars
- 8.4 True course and actual course
- 8.5 Magnetic compass (exercise: description, use)
- 8.6 GPS
- 8.7 Rules governing steering and sailing
  - 8.7.1 General
  - 8.7.2 Narrow channels and fairways
  - 8.7.3 Restricted visibility
  - 8.7.4 Order of priority
  - 8.7.5 Most common scenarios
- 8.8 Vessel navigation lights
- 8.9 Buoying
  - 8.9.1 Types of marks
- 8.10 Tides
  - 8.10.1 Tidal currents
  - 8.10.2 Winds

Training material	Other supports
• Training manual	• Charts
• Videos	• Crass ruler
• Manuals on collisions	• Magnetic compass
• GPS	

Training officer guidance sheet **N°10**	1 Before
METEOROLOGY	2 At sea
	3 After

Module content:

The aims of the module are to ensure that training officers:

- Familiarize themselves with meteorology;
- Are aware of its importance for safety;
- Know how to obtain and use weather information;
- Understand weather changes at sea;
- Know how to take measurements in bad weather.

Duration: 1 day

9 METEOROLOGY

9.1 Weather forecasts

9.2 State of the sea

Training material	Other supports
• Training manual	• Thermometer
• Videos	• Hygrometer
• Depictions of the sky and clouds	• Compass rose
• Weather forecasts	• Barometer
• Fishermen's experiences	
• Beaufort / Douglas Scale	
• Conversion tables	

Training officer guidance sheet **N°11** **VESSEL STABILITY**	1 Before 2 At sea 3 After

Module content:

The aim of the module is to ensure that training officers:

- Have basic knowledge of vessel stability;
- Know the importance of stability for safety;
- Know how to conduct themselves aboard a vessel;
- Know the principles of vessel loading.

Duration: 1 day

10 VESSEL STABLITY

10.1 Position of the centre of gravity depending on load

10.2 Factors affecting stability

Training material	Other supports
• Training manual	• Binoculars
• Videos	• Radar reflector
• GPS	
• Magnetic compass	
• Charts	

Training officer guidance sheet N°12 **BASIC KNOWLEDGE OF SEARCH AND RESCUE (SAR)**	1 Before 2 At sea 3 After

Module content:

The aims of the module are to ensure that training officers :

- Have basic knowledge of search and rescue;
- Are familiar with search and rescue procedures;
- Are familiar with the main search and rescue techniques;
- Are familiar with search and rescue equipment;
- Have some knowledge of first aid.

Duration: 1 day

11 BASIC KNOWLEDGE OF SEARCH AND RESCUE

11.1 Search and rescue of shipwrecked persons

11.2 First aid

11.3 Recommendations regarding crews'working conditions, hygiene and health

Training material	Other supports
• Training manual	• Safety kit
• Videos	• Life jackets
• Other papers	• Floaters
• Simulation exercises	• Ropes
• Charts	
• Binoculars	

Training officer guidance sheet **N°13**	1 Before
MONITORING, CONTROL AND SURVEILLANCE	2 At sea
	3 After

Module content:

The aims of the module are to ensure that training officers:

- Are aware of the importance of monitoring, control and surveillance for resource management and safety improvement;
- Can distinguish between the three concepts : monitoring – control - surveillance;
- Know the rules and methods of control and inspection of vessels and catches.

Duration: 1 day

12 MONITORING, CONTROL AND SURVEILLANCE

12.1 Rules and methods of control

12.1.1 Vessel control

12.1.2 Catch inspection and control

12.1.3 Practical use of inspection equipment

Training material	Other supports
• Rules and regulations	
• Fish size-limit scale	
• Rulers, calipers	
• GPS	
• Charts and supports	

Training officer guidance sheet **N°14**	1 Before
DATA COLLECTION ON SAFETY IN SMALL-SCALE FISHERIES	2 At sea
	3 After

Module content:

The aims of the module are to ensure that training officers :

- Are aware of the importance of statistics;
- Are able to impart basic knowledge of statistics to the players;
- Are able to complete data sheets on accidents and incidents at sea.

Duration: 1 day

13 DATA COLLECTION ON SAFETY IN SMALL-SCALE FISHERIES

Training material	Other supports
• Various examples of data collection sheets	• Gauge
• Exercises on monthly, three-monthly and annual data	• Measuring tape
• Group participation	• Scales

Training officer guidance sheet **N°15**	1 Before
SPECIFIC PROBLEMS	2 At sea
	3 After

Module content:

The aims of the module are to ensure that training officers:

- Know the circumstances surrounding unlawful acts;
- Know the national and international rules and regulations governing the definition and suppressioin of unlawful acts;
- Are aware of the problems specific to the SRFC countries;
- Share information on safety;
- Are aware of the state of affairs regarding illegal migratory flows and the consequences thereof.

Duration: 1 day

14 SPECIFIC PROBLEMS

- 14.1 Unlawful acts and attacks at sea
- 14.2 Mysticism and safety
- 14.3 Solidarity and mutual aid in fishing communities
- 14.4 Unreported and unregulated illegal fishing

Training material	Other supports
• Training manual	• Charts
• Videos	• Binoculars
• Data collection sheets	• Safety kit
• Report on acts of piracy	• Life jackets
• Players' anecdotal evidence	

Training officer guidance sheet **N°16**	1 Before
SIMULATION EXERCISES	2 At sea
	3 After

Module content:

The aims of the module are to :

- Reinforce the knowledge gained in the theory classes;
- Put into practice the knowledge acquired in the training course.

Duration: 1 day

15 SIMULATION EXERCISES

15.1 Capsizing

15.2 Man overboard

15.3 Injuries at sea

15.4 Drownings

Training material	Other supports
• Charts	• Charts
• Binoculars	• Binoculars
• Safety kit	• Safety kit
• Life jackets	• Rope and floater
• GPS	

Training officer guidance sheet N°17	
TRAINING EVALUATION SHEET	
	After

	EVALUATION CRITERIA	MARK	COMMENTS
1	Were the aims of each module made clear?	1 2 3 4	
2	Did the training officer use a participatory approach?	1 2 3 4	
3	Did the training officer adapt his/her presentation to the audience?	1 2 3 4	
4	Was the training officer willing to listen to participants problems?	1 2 3 4	
5	Did the training officer encourage the sharing of experiences?	1 2 3 4	
6	Was the training officer's voice clear?	1 2 3 4	
7	Were the training sessions well-prepared?	1 2 3 4	
8	Did the training officer check that lessons had been understood and learned ?	1 2 3 4	
9	Did the training officer observe lesson times?	1 2 3 4	
	RESPONSE TO PARTICIPANTS EXPECTATIONS		
10	Did the training course really cover what you expected it to?	1 2 3 4	
11	Do you think the training covered useful topics for your work?	1 2 3 4	
12	Do you think you have assimilated the various topics sufficiently and will be able to put them to use when you return to work?	1 2 3 4	
13	What do you think of the course duration ?	1 2 3 4	
	ORGANISATION		
14	What did you think of your welcome?	1 2 3 4	
15	What did you think of the catering?	1 2 3 4	
16	What do you think of the classrooms?	1 2 3 4	
17	What do you think of the course papers?	1 2 3 4	

DURING THE TRAINING
☺ What I liked:
☹ What I did not like:
?😐? What I found confusing:
ⓘ My suggestions:

Legend:

- **1 = BAD**
- **2 = AVERAGE**
- **3 = GOOD**
- **4 = VERY GOOD**